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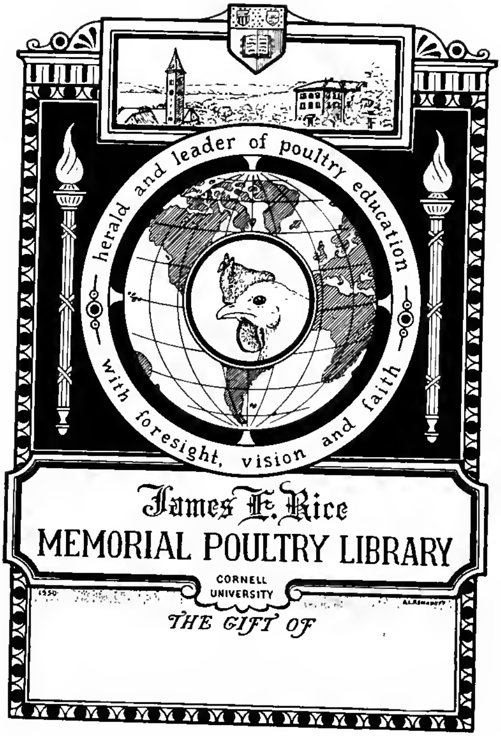
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SICK FOWLS
AND THEIR
TREATMENT

By

E. COBB, F.Z.S.

FOURTH EDITION.

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Sick Fowls
and their Treatment.

Section VIII.

BY

E. COBB, F.Z.S.

FOURTH EDITION.

"THE FEATHERED WORLD,"
9, ARUNDEL STREET, STRAND, LONDON, W.C. 2.

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SICK FOWLS AND THEIR TREATMENT.

SECTION VIII.

By E. Cobb, F.Z.S.

One of the most valuable assets that a poultry fancier can possess is a thorough knowledge of poultry diseases, their cause and cure. Sooner or later disease is bound to make its appearance in a poultry-yard of any extent, and if its owner is ignorant as to the cure of such disease, sad havoc may arise before he has found out. Certainly there are many most excellent books on poultry diseases that anyone can at once refer to. There is no difficulty as far as this goes. Where the difficulty does come in for the novice is in finding the place in the book where this particular disease is treated on. As an example, he may have found one of his fowls with some large growth in its mouth. He is quite ignorant as to the proper name of this disease, and although if he glanced through his book of poultry diseases and saw the heading "Cheesy Growths in Mouth," he would readily comprehend that this was the portion he wished to read about, he might have to wade through the greater part of the book before he discovered that a large growth in a fowl's mouth was treated on under the heading of "Diphtheritic Roup." This was the primary reason, having experienced the same difficulties ourselves, that induced us to write on this subject, and to classify the diseases not by their scientific names, but by the chief symptom of any disease that is apparent in the living specimen. This we intend doing as far as is possible in the following pages.

In submitting this eighth section of our poultry book to the Fancy, we desire to lay no claim to scientific medical knowledge of the subject. We offer the same as a plain statement of facts proved by practical work, and as such we cannot but think they will be found equally as beneficial to others and of service to the poultry-keeper.

AN AILING BIRD.

First and foremost we wish to impress upon the reader that there is no—and never will be—sovereign cure that can be administered for one and every disease that a fowl is heir to. Poultry are similar in this respect to human beings. If you are suffering from cancer you would probably consider your doctor the opposite of a clever physician if he treated you in the same way as he ought to do if it were a case of small-pox; and to at once fly to that—in most cases—abominable drug, castor-oil, as many poultry-keepers do whenever a fowl is ill, is usually the height of folly.

Again, frequently do we receive letters asking us if we cannot prescribe some remedy to put into the water or soft food given to the birds to eat. "We haven't the time" (or can't take the trouble) "to do all you advise us to do," is the substance of these communications. We can only say, if you have not the time, or are indisposed to take the trouble necessary to cure your birds in a proper manner, we are unable to assist you; and you will probably be—under such circumstances—pounds in pocket by at once killing a diseased fowl and if possible, *burning* the carcase, or, if you are unable to burn its body, by burying it deep down in the ground, where other fowls are not in the habit of assembling, and under such conditions that there is no liability of the body being scratched out to the surface. A manure heap to which fowls have access is about the worst possible burial ground that can be chosen.

Unless you are fully aware that a fowl's complaint is not contagious, we would strongly advocate that on the development of any symptom of disease the sick bird should immediately be isolated from the healthy stock. If poultry-keepers would make a rule to carefully once a month thoroughly overhaul their birds, great benefit would frequently accrue both to the birds and their owners' pockets. We recommend that on a specified day in each month the birds shall be shut into their houses the night previous, and in the morning each bird shall be handled and thoroughly examined. Squeeze the nostrils, and see if any mucous watery matter comes away; open the mouth, and see if you can find any white or yellowish cheesy growths inside; feel if the bird is going light in weight, especially if it is losing flesh on the breast-bone; turn the feathers back on the abdomen and see if lice and lice eggs are abundant; when placed on the ground notice if the bird walks stiffly, or if its movements are free and easy; take notice of the colour and nature of the excrements lying on the manure board; notice if the face is red and swollen, or, on the other hand, if it is shrunken and pale in colour. Frequently will it be found that by adopting such a course as here recommended the first symptom of some dire disease becomes apparent to the owner. The bird is at once isolated and doctored, and even if a cure is not accomplished, there is always the satisfaction of knowing that you have done your best, and that you have probably saved a number of other fowls from dying in a similar manner.

We are fully aware that with many of the huge and unsuitable fowl-houses frequently found on farms the above practice would involve a considerable amount of labour; but if small houses are built, especially if they are constructed on the principle strongly advocated by the writer in "Housing and Feeding of Stock," the time occupied is but trifling, though the gain is often inestimable.

The importance of attending to the proper health of one's poultry cannot be over-estimated. No matter what amount of care and attention be paid to the growing chickens, if the same are produced from unhealthy and diseased parents it is an impossibility to reap a full measure of reward for one's industry. Our experience is that there is nothing the average fancier neglects more than the health of his stock birds. We fully admit that when a bird gets to the stage that it refuses to eat, that it is continually gasping as it were for breath, that on catching hold of it it is discovered that there is hardly an ounce of flesh on its breast-bone—that then most fanciers will spare neither trouble nor expense in their endeavours to effect a cure. But it is rare indeed to find a poultry-keeper who systematically overhauls his birds in order to accurately ascertain the true nature for the time being of their constitutions, and thus by detecting the first symptoms of disease immediately sets to work to remedy the evil. Knowing that this is so, and knowing also that a vast deal of labour, disappointment, and expense may, in most cases, be saved, it is with the feeling of confidence that we shall have done more good to those fanciers who will adopt the method we advocate of periodically—at least once a month—generally overhauling their birds, than it will be possible for us to do for others who wait until the disease is apparent to the ordinary observer before applying the remedies we recommend, and we have no hesitation in saying that the reader who will not, or cannot, adopt such a system will not derive one-half of whatever benefit may be contained in the pages of this section. To the well-known saying, "Prevention is better than cure," we would add "The effects of remedies applied in the early stages of any disease are worth twenty to one as when the same are administered in the final stages." If our readers will but bear this in mind, and act in accordance, we shall feel that no apologies are needed from us for having treated what some may feel inclined (erroneously) to consider a secondary matter at such length, and, also, that our endeavours to help both sick fowls and their owners will not altogether be in vain.

BROKEN BEAK.

Through fighting or some other accident it not infrequently happens that a fowl will break one or even both mandibles of its beak. If no attention be paid to such a fowl it is at times liable to starve from inability to pick up the food off the ground, but if so be that it is able to eat sufficient to maintain life the liability of growing a crooked beak is very great.

But with a little care on the part of the owner no serious harm is likely to happen, and the bird—as far as its beak is concerned—will be just as good in the future as he had been in the past.

Treatment.—There are two main objects that the attendant on a fowl with a broken beak should bear in mind—namely, that primarily he must feed the fowl on such food that the bird is able to pick up; and, secondly, that such food is given in a manner the least likely to cause injury to the new and tender growth of the mandible.

Now many a bird with a broken beak is quite unable to pick up hard corn from the ground. The writer has known several cases where a broken-beaked fowl has died in a short while simply because it was fed on hard corn, and could not pick it up off the ground. Had soft food been given instead of hard corn the probability is the bird would have lived. But then there is a danger in throwing even soft food on the ground for such a fowl, inasmuch as the bird in pecking at it is liable to injure the new growth of its beak against some hard substance. The best method we know is to place the fowl by itself and feed it out of a fairly deep wooden box, say a box 6in. long by 4in. wide and 4in. deep. Fill this three-parts full of soft food, and when it is considered that the bird has had enough at any one meal remove the box and give the contents to other fowls. In this manner the bird can get a good cropful without having to touch the bottom of the box at all with its beak, and thus no injury is done to it.

As the new beak grows and hardens somewhat corn may be given in the box instead of soft food, but whatever is given see that there is an abundance, so that there be no necessity for the bird to strike the bottom of the box with its beak.

From careful observations we have made from time to time we feel convinced that many of the crooked-beaked birds that are often to be found have, either as youngsters or later on in life, had their beaks broken, and either the mishap has never been seen, or, if it has, no action has been taken in the matter. The remedy is so simple and so sure that no poultry-keeper should neglect it. (*For "Broken Limbs" see page* 172.)

CATARRH—COLD—ROUP.

(See "*Running at the Nostrils.*")

CHEESY GROWTHS IN MOUTH: DIPHTHERITIC ROUP.

This is a most contagious disease, which, if not attended to quickly, spreads through the entire poultry-yard. There are at least three different forms of disease all known in the poultry world under the name of diphtheritic roup; but as each kind requires somewhat different treatment, we propose treating them under their several headings as distinct diseases.

In Professor Theobald's book on "Parasitic Diseases of Poultry" he mentions the fact that we were instrumental in providing him with numerous cases of this disease for experimental purposes. Probably there are few poultry-keepers—certainly we trust so—who have had a wider experience in dealing with this disease than ourselves; and although, as we have previously stated, we lay no claim to scientific knowledge, yet the fact that we often treated successfully scores of fowls at the same time, all suffering from one or another form of this disease, emboldens us to, in some particulars, differ from the views of scientists.

Symptoms.—In two well-known works on poultry diseases one of the first symptoms given is discharge of sanious liquid from the eyes and nostrils. We can only say that from experience, where one bird suffering from this complaint will exhibit such symptoms, a hundred others can be found without such signs. Professor Theobald even says: "This disease, which is highly contagious, as a rule, coming in an epidemic form, *can at once be told* (the italics are ours) by the dejected look of the patient, the frequent glairy mucus exuding from the mouth and nostrils (similar to the exudation in ordinary roup), and finally by the appearance of the internal excrescences." Without doubt we have seen many cases exhibiting such symptoms, but what we desire to impress upon the poultry-keeper is that if he is relying on seeing such signs before he need trouble himself that his fowls are suffering from diphtheritic roup he is living in a fool's paradise, for when such signs are visible he may rest assured that many of such birds have been suffering from the disease for some time past, and that his work in effecting a cure is rendered infinitely more difficult than it would have proved had he tackled the disease in the first instance. There is only one safe course to pursue, and that is to periodically open the birds' mouths and see if any growths are to be found therein. If you wait till external symptoms are visible, trouble—a very great deal in a large poultry-yard—is in store for you.

Treatment.—At once isolate all affected birds, and keep a sharp watch over the remainder for further developments. With the small blade of your pocket-knife, or, if low down in the mouth, by aid of a pair of forceps, remove the growths, carefully collecting these and burning them. Now with a camel-hair paint-brush paint the spots from whence the growths have been removed with the following solution: 1 drachm acid carbolic, 3 drachms acid sulphurous, 1 oz. tincture perchloride of iron, ½ oz. glycerine. The painting with this solution should be performed as quickly as possible.

Repeat operation as often as may be necessary. As a preventive in the case of the healthy birds, and as a means of destroying loose germs in the diseased fowl, both should be given salicylic acid in their drinking-water—one pint of 10 per cent. salicylic acid to one pint of water.

Professor Theobald advocates watering the ground of the poultry-yard with a 2 per cent. solution of sulphuric acid, which, in a limited space, would no doubt be practicable and beneficial. Further, he advocates in place of the solution already given, painting the spot after removal of the growths with "a strong solution (10 per cent.) of boracic or, better still, salicylic acid," and only a limited quantity of drinking-water, supplied as previously recommended.

Either of the above methods will be found effectual, but it is desirable that the drugs used should be fresh, and obtained from a good chemist, as before now we have found a very marked difference in the efficacy of the solutions supplied by various chemists.

Progress of Disease, etc.—If these growths—which vary in colour from white to yellow—are not removed, or if ineffectually removed, they gradually extend down the bird's throat, and the case becomes hopeless. At times the bird's nostrils become blocked, in which case they should be bathed with disinfected warm water, and pressed clean by squeezing in a downward direction, and any small growth seen to be left painted with the same solution as that employed for the mouth. A peculiarity about this disease is that one can never feel sure that the patient is thoroughly cured. We have known it to break out again and again in the same fowl. One old bird in particular, we remember, had it regularly every autumn, and for the rest of the year seemed as well as possible.

Again, fighting will at once produce the disease in a yard that is more or less affected by this complaint. We have seen it stated that it takes some seven or ten days after a fowl is infected for the disease to show itself. Possibly this may be so, but we have known many apparently perfectly healthy fowls to fight, and the disease to make its appearance within forty-eight hours; not once, but time after time has this occurred with different specimens. In one particular instance we know of a cockerel being purchased from a yard where diphtheritic roup had never been known, and to fight the same day with another cock in a yard where the disease was common, and, on examining them next day, both had signs of the growths in their mouths. Further, the remaining stock from whence this cockerel was purchased was carefully examined by ourselves, and not a trace of the complaint could be discovered. With many similar cases before us, we cannot but think that under certain favourable conditions the disease can develop in a very short space of time.

Notwithstanding the fact that in a few cases we have known it to break out again, a great number of birds that are only affected in the mouth have been, and can be, permanently cured.

White Spots or Streaks in Mouth.

This is another form of the same disease—diphtheritic roup.

Symptoms.—Small spots, blotches, or streaks of white growth on sides of beak inside the mouth or under the tongue.

Treatment.—According to Professor Theobald this form of diphtheritic roup is less amenable to treatment than in the case of the large yellowish growths. Such has, however, not been our experience as a rule. Generally speaking, we have found two or three dressings—often only one—with the carbolic, etc., solution advocated in the former case have been sufficient to entirely destroy the growth, and, in the fewer cases where this treatment has not been successful, the burning out of these spots with lunar caustic always has. In other respects treat as advised in the preceding case.

Warts on Face, Comb, etc.

Still another form of diphtheritic roup.

Symptoms.—When first this complaint attacks a fowl small yellowish-brown specks appear, deepening in colour as time goes on, varying in size up to that of a large pea. According to Professor Theobald, he has only observed the same on the head, but we have known practically every part of the body to be affected, even to the end of a bird's toe. In a short while, if not attended to, the birds frequently waste away and die.

Progress of the Disease.—We think we cannot do better than to quote the above authority on the progress of this disease. He says: "After a little time the nodules form crusts of a brownish colour, and under these in the lower parts I have found numbers of coccidia, which seem to be similar to those in diphtheritic growths. Revolta regards these parasites as a distinct form, which he named Amœba croupogena So far as is known at present, this disease is a true coccidiosis of the skin. At the commencement these sporozoa are small, round, nucleated protoplasmic masses. These masses by degrees increase in size, and then become surrounded by a thin shell. These encysted bodies appear to burst the epithelial cell into which they have entered. Then each encysted mass becomes broken up into spores internally. Each spore again subdivides into two or more bodies known as falciform spores, which when liberated become amœboid forms; these then invade other cells, generally taking up their position in the malpighian stratum of the skin. In this latter position they commence again a similar life-history, and so the disease is spread."

We have seen fowls so greatly infested with this disease that certain parts of their body showed more of these wart-like excrescences or nodules than skin. Some years ago we had a large number of fowls and chickens suffering in this manner, and no special part of the body seemed free from attack. We lost quite a few, but we cured many more than we lost. As a fact, we do not remember ever losing a full-grown fowl from this complaint. It is with growing chickens that this disease so often proves fatal; even if a cure is effected with such, they will rarely pay for the trouble, as their growth is nearly always stunted.

Treatment.—Isolate all affected birds. Bathe the affected parts, if possible, with warm water and soft soap, and any crusts that come easily away without making the parts bleed may be removed. Paint the spots with lunar caustic. Oil of turpentine is also excellent. Administer daily to a full-grown fowl one tablespoonful of the following solution ten minutes or so before its breakfast, viz., ½ oz. chlorate of potash, 1 oz. perchloride of iron, 1 pint distilled water.

The remaining healthy birds should, if possible, be removed to fresh ground, and the old run well strewn with quicklime, and no birds allowed on same before it has repeatedly been well washed with rain or artificially watered.

In concluding the subject of diphtheritic roup we would wish to impress upon the novice that this disease is far more common amongst poultry than is generally supposed, and that, in purchasing new fowls, do not rely on the general look of the birds' health, but open their mouths and see if any of the signs here given are to be found therein. If they are, and diphtheritic roup is unknown in your yards, we strongly advise you to return them without delay. It is a bad enough disease to tackle when it happens to develop in any yard, but under no consideration is it worth while paying for it.

COMB DISEASES.

There are several complaints or diseases that attack more or less the comb only; at the same time it should be remembered that when a fowl is suffering from almost any disease—more especially if it be a single-comb bird—the effects are, to a certain extent, generally to be seen indicated by the condition of the comb. Still, as we have said, there are some complaints that only attack the comb, or comb, wattles and head, and on these we propose to now treat.

Comb—Crack In.

Frequently with large single-combed cocks a crack is found in the comb and filled with a yellowish growth; or, in other cases, a coloured patch is observed which eventually gives way to a hole in the comb, evidently being eaten out by this yellow growth.

Treatment.—Clean the place as much as possible, and paint with the same solution as advised in the case of "cheesy growth in mouth."

Prevention.—Our experience is that this complaint only arises where there is a fold or crease in the comb, and which collects dirt. We never knew it to occur in the case of a bird that we were in the habit of exhibiting and whose comb we had thoroughly cleaned several times. At the same time we are fully aware that scores of exhibition Minorcas, Leghorns, and their like have eventually been missed as show birds by this complaint. Many such a one has a slight crease or hollow that is difficult to get at; probably when washing his comb preparatory to despatching him to some show it was noticed that there was a little dirt collected underneath, but, as the fold covered this up, no trouble was taken to remove it. When this is not the case probably the bird had a slight touch of "white comb" disease, and by not being properly attended to a cankerous growth was set up.

Comb—White.

Symptoms.—As a rule the comb is the first spot to be affected, but in a short time the face, wattles, and neck manifest the disease, which appears to be a white fungus. If unattended to the feathers fall out, the bird becomes very depressed, and sometimes dies of the complaint.

Treatment.—Mr. Vale asserts that this disease is difficult to cure. We can only say we have cured a good many and never had a case that we could not. Bathe the affected parts with warm water, removing any crust that will freely come away. Dry thoroughly, and apply carbolic oil of the strength of one in twenty. Repeat operation daily for three days. If at the end of that time a considerable improvement is not apparent discontinue the carbolic oil, and in its place employ a mixture of one part red oxide of mercury to eight parts of lard. Either dressing employed should be well rubbed in. In all cases apply the dressing to the comb, face, wattles, head, partly down the back of the neck and shanks of the fowl. Give as much exercise as possible, fresh air, and fresh, green food. The disease is contagious.

Not only is the disease contagious amongst poultry, but it is quite possible to transmit it to human beings, especially if the operator has a cut or open sore on his hand. Anyhow, it is always desirable to wash the hands in some disinfected water after operating on any diseased fowl.

Comb—Black.

Here again we get two different complaints with similar symptoms, one being known as "black rot" and the other the effects of frost-bite.

Symptoms.—In both cases the spikes on the serrations of the comb are discoloured, and if not attended to quickly will soon become black, die, and fall off.

Cause.—It is difficult to say in all cases what the actual cause is, but indigestion, or some internal disease, and in the latter case probably through slight debility and a severe frost

Treatment.—In the case of "black rot" apply carbolised vaseline, rubbing the affected parts gently, but working the vaseline well in all over the comb. If in addition the bird appears to be much depressed and has a poor appetite, administer daily 10 grains each of sulphate of magnesia and bicarbonate of soda stopping the same as soon as an improvement is noticed, and feed on oatmeal porridge made with milk. If the crop does not empty, and contains much food, treat as advised under the heading of "Crop-bound."

As regards a frost-bitten comb (and possibly wattles), bathe the same for some considerable time in the coldest iced water possible. Half an hour is none too long to continue the operation. Dry thoroughly, and apply carbolised vaseline as in the case of "black rot." A good preventative against frost-bite is to apply a little vaseline to the comb at night-time; this should always be done with a large-combed bird not in the best of health in severe weather.

Comb—Bleeding.

Although not a disease, it may be as well to mention that at times hens are apt to peck a cock's comb. We have frequently seen three or four hens round a male bird pecking his comb, the bird standing perfectly still, apparently quite indifferent that the blood is pouring down his face and neck.

Cause.—It is difficult to say in all cases what the actual cause is, but frequently, we believe, the trouble is started by a hen noticing an insect crawling on the small raised feathers at the base of the cock bird's comb, and in pecking at this injures the comb and makes it bleed. Seeing a drop of blood form it pecks this also, gets a liking for the taste, and continues the operation.

Treatment.—Remove the patient, wash away the blood, and apply a little ordinary vaseline. Should, however, the bleeding be profuse, apply friar's balsam. It is advisable to keep the male bird away from the hens until the congealed blood on the comb has dropped off; but if it is necessary that he should be placed back before this occurs, smear carbolised vaseline well over the comb, which, as a rule, stops the hen from giving a second peck.

Always examine the bird for lice, and, if necessary, treat as advised under the head of "Insect Parasites," bearing in mind that if the male bird is infested the probability is that the hens also are similarly affected.

Comb—Torn.

An accident sometimes occurs by which a fowl gets its comb torn in half.

Treatment.—Hold the comb under a tap of running water or under the pump, in order to wash away any dirt thereon, care also being taken that the operator's hands are quite clean. Then with fine catgut sew the edges of the wound together, tying off each stitch made separately. Do not endeavour to bring the edges of the wound together in their proper place by making stitches right through the comb, but make the necessary stitches each side of the comb. Apply a little friar's balsam and afterwards ordinary vaseline.

As previously mentioned, the best needle to use is a curved surgical needle, obtainable through any chemist, a few of which should always be kept in stock.

CORN ON FOOT—BUMBLE-FOOT.

Symptoms.—At first redness on the outer edges of the ball of the foot, which shortly becoming enlarged and covered with a corn-like growth, often increases so much that not only is there a huge swelling on the ball of the foot, but the same bulges out between the toes.

Causes.—Probably the actual cause is due to inflammation of the sheath of a tendon, but the predisposing causes are in the first instance the alighting from some high perch, being knocked down possibly by other birds in an endeavour to secure the highest perch in the fowl-house, and subsequent continued pressure, or by accidentally straining the tendon, and the continued after pressure of the bird's body.

Treatment.—If the trouble is noticed in its earlier stage, *i.e.*, previous to a great hardening of the cuticle, take a sharp knife and carefully pare away the hardened portion, and paint with a strong tincture of iodine, placing the bird in an exhibition pen or some other convenient place, where it cannot perch, and is provided with a soft pen of hay to sleep on.

But if the enlargement is excessive, the growth will probably have to be removed before a cure can be effected. The best way to accomplish this in an efficient manner we have found to be, first of all, to well poultice the foot with bread poultices. Take a good-sized poultice and envelop the foot therein, make it secure, and replace with fresh three or four times a day; probably during the second day of such treatment the "corn" will have become well softened; if so, with the small blade of your pocket-knife peck away at the edges of the corn, and by a little careful manipulation the whole growth can be extracted. Hold the wound under a tap of water to make sure all is extracted that is possible without injury to the tendons, and draw the edges of the wound together with a few stitches, each stitch being complete of itself and separate from another. Apply a wet pad, and bandage the same on, keeping the bird's foot perfectly free of dirt till healed over. At times it may be found necessary to enlarge the hole in order to properly extract the growth; this should be done by lancing the swelling across that portion under which the growth lies.

CRAMP—LEG-WEAKNESS—RHEUMATISM.

All three of these complaints are liable to be confounded by the novice as one and the same; we therefore propose to deal consecutively with each, instead of mixing them up in their alphabetical order amongst many other diseases. With regard to

Cramp.

It is not often that one comes across cases of this complaint in adult stock. When such do occur, it is usually the effect of some gross mismanagement, such as tying the bird's legs together, or confining it in a box or hamper far too small to properly accommodate it. But with young chickens it is different, whole broods often being affected at the same time.

Symptoms.—Inability to walk properly, usually accompanied by diarrhœa. The muscles are contracted, not swollen as in the case of rheumatism, and the toes are often drawn in towards the ball of the foot.

Cause.—The most frequent causes are keeping the chickens cooped on a wooden or brick floor. In either case the foot is always spread out flat upon a hard, unyielding surface. Now, this is not the case when the bird is running about in the open; the natural ground is uneven, lumps, hollows, irregularities are everywhere, and mostly during the chicken season the ground is soft and gives to the foot's pressure, the consequence being that every muscle is brought into play, and is thus kept in a healthy, active state. But on a wooden, brick, or cement floor the foot is continually being kept in exactly the same position—flat; certain muscles are rarely brought into play, and a little chicken will quickly lose the use of such muscles unless it be continually exercising them. A fowl's foot was never made for walking on a perfectly flat and unyielding surface, and to compel it to do so will only lead to disaster.

Occasionally cramp is caused from dampness, but this is rare; and in the majority of cases it will be found that inability to properly exercise muscles, either from being reared on a hard surface, or from the fact that they are being reared in more or less close-confinement, with little inducement to be continually on the move hunting for insects, etc., is the true cause of cramp in either chickens or ducklings.

Treatment.—If anyone is foolish enough to allow their chickens to get into such a condition that they can hardly walk, they must be prepared to go to a good deal of trouble in order to cure them, namely, to soak the feet and legs night and morning in warm water, dry thoroughly, and apply some camphorated oil, well rubbing the same into the joints. But taking it that the majority of poultry keepers will have noticed the health of their chickens long before the state just described, it is generally sufficient to effect a cure if the cause or causes, as mentioned above, are removed.

Rheumatism.

Symptoms.—Similar to those in cramp, but affected parts are hot and swollen. In some cases of chronic rheumatism that we have met the limbs and joints are quite deformed, with hard lumps projecting.

Cause.—Damp and cold, combined with bad management during chickenhood. If your adult birds or chickens have a dry place to resort to both during the day and night time, no matter how damp and cold it may be, you will rarely have a case of rheumatism to deal with. As an example, let us suppose you have a dozen coops in a certain spot, and the season is an exceptionally damp and cold one, and the place chosen a most unsuitable position for rearing chickens under such conditions. One half of these coops you provide with a false wooden bottom, and cover the same well over with dry chaff or some other similar material, and that you will at least twice a day, if it be very wet weather, examine this material, and if necessary renew it with dry. The other six coops you either give no bottom to, or if you do, and provide any bedding, you do not renew it when it becomes wet. Under such circumstances you will find many chickens in the latter coops suffering from rheumatism, but none in the former. So long as the birds can resort to a perfectly dry place in the day time, and have a dry bed to sleep on at night, the weather may be ever so wet and cold, but rheumatism will not affect them.

Treatment.—Remove to a dry, warm place. Wash the parts in warm water, dry thoroughly, and paint with iodine. Administer half a teaspoonful of Epsom salts, and twice daily six drops of colchicum wine in a teaspoonful of water to an adult fowl, and one or two drops to a chicken. Feed on soft, unstimulating food, such as oatmeal porridge.

LEG-WEAKNESS.

Symptoms.—Extremely shaky on the legs, in some cases losing all power in the legs; when stood up at once falling to the ground when the hand is removed.

Cause.—Debility, the result of some heavy strain on the system. It will generally be found that the fowls to suffer from this complaint are pullets, cockerels, and old cocks, but very rarely in the case of an old hen. The cockerel will be affected when he is growing very fast, or at the time of moulting into adult plumage; the pullet just as she starts to lay; and the old cock at the end of the breeding season. Such, anyhow, will be found the case as a rule, and it is easy to be seen how each has had considerable extra strain put upon the system, causing debility.

Treatment.—We have heard of all sorts of things being advocated to rub into the bird's legs in order to cure this complaint. We are not prepared to deny that many a bird so treated has recovered; in fact, we know quite a number of cases where they have done so; but we do say that we do not believe the treatment they received helped them one bit to do so! It was simply a matter that their constitution was strong enough to pull them through.

In the first place, see that the bird is free from insects, and, if not, give a thorough good dusting with insect powder, which operation may often be repeated in a week's time with advantage. Place the bird on dry boards well covered with dry, clean hay, and see that the same is kept in this condition. An ordinary exhibition pen is a handy place.

Feed in the ordinary way, but administer daily a teaspoonful of cod liver oil and ten drops of colchicum wine added thereto. Give a little cooked meat daily and ample chopped green food—dandelion leaves for preference. It is not desirable to continue the colchicum wine too long. As a rule, two or three days of above treatment will effect a cure; but if it does not, give the above dose every alternate day.

Care should be exercised to see that the bird is able to get to its food, and is willing to feed. In the event of it refusing a fair amount of food, a raw egg beaten up and administered daily is an excellent remedy.

More than one authority has questioned the advisability of giving colchicum wine for this complaint; we can only say that we have in practice treated many scores of such cases as above advocated, and never remember ever having one that we were unable to cure, though in one particular case the bird had not stood up for over six weeks before we had it for treatment.

CROOKED BREASTS.

There are many poultry-keepers who look upon crooked breasts in their fowls as nothing short of a disease, consequently we make no apology for here making a few remarks on the subject.

That a crooked-breasted male bird that had an inherited tendency to a weak breastbone and was himself crooked would, if mated to a crooked-breast hen that also had an inherited tendency to a weak breastbone, be liable to throw most and probably all their offspring with weak breastbones, which would one and all become crooked, we fully believe, but we are also fully convinced that where you will find one crooked-breasted fowl with an inherited tendency to a weak breastbone you will find a thousand other crooked-breasted birds that had no such evil inheritance. As a fact, there is no difficulty in producing a flock of fowls with crooked breasts, even when all are bred from perfectly straight-breasted parents, and there is but little more difficulty in the majority of cases in producing perfectly straight-breasted youngsters from crooked-breasted stock birds.

Cause and Treatment.—A close and extensive examination into the cause of fowls crooked in the breastbone has satisfied us that this defect is produced in almost all cases solely as the result of the fowl's body pressing on exactly the same spot on the breastbone night after night.

In the majority of fowl-houses the perches placed therein are all of the same size, so that no matter whether a fowl goes to roost in a different spot every night (which they dislike doing), the perches being of the same width right through, the bird will grasp the perch in the same position—the position that he fancies most—whether he be at the end or the middle of the perch, or even if he be on a different perch altogether, and so the weight of the fowl's body is night after night pressing down in exactly the same spot on the breast-bone, and it is this continued pressure on the same spot that causes the bone to eventually become crooked.

If this is granted then it can readily be seen that the advice given by most experts when asked the question which is best, narrow or broad perches, is sound, forasmuch as the invariable reply is broad perches. On a narrow perch the whole weight of the fowl's body is pressing down night after night on exactly the same very small portion of its breastbone, but if a broad perch be used then the amount of breastbone that bears the weight of the body is considerably increased, and is better able to withstand the pressure without injury.

But although a broad perch is better than a narrow one, the former evil will not prevent many crooked-breasted fowls being produced. What is wanted to ensure straight-breasted youngsters is to absolutely prevent the weight of its body night after night pressing down on exactly the same spot on its breastbone. The Pheasant has often been held up as an example when a controversy has taken place in reference to broad or narrow perches, some writers asserting that the bird chooses narrow boughs, and others that it selects broad ones to roost on. In reality it chooses both, sometimes a narrow one and at other times a broad one. But further than this, the bird is continually roaming the country in search of pastures new, roosting here to-night and somewhere else to-morrow. We admit that at certain seasons a Pheasant will for some weeks roost in the same tree, but our observations go to show that it is very rare indeed that he will roost in the same spot in any tree for a week at a stretch. The grasp of the foot, the position of the body, the pressure on the breast-bone are continually being varied.

By placing chickens in a house with no perches, and liberally covering the bottom with dry sand several inches thick (or other soft material), and taking care that there is always a good supply in those places where they go to sleep, straight breast-bones may be insured, provided this treatment is continued until the birds are some six or seven months old. Even if only carried out till the birds attain four months of age considerable benefit will accrue, but six months of such treatment is none too long to insure success.

Where this is not practicable we advocate the continual alteration in the size of the perches provided. Sockets can easily be placed in the fowl-house to carry different-sized perches, and each night let a different-sized perch be allowed. Failing this, let the perches be made very broad at one end and narrower at the other (not less than two inches), and each day turn the perches round, so that on the side of the house where the large end was last night the narrow end will come to-night. Fowls generally endeavour to get in the same position in a house each night, and a bird that is in the habit of roosting in the left-hand corner will one night have a very broad perch and the next a narrower one. Thus there is no continued settled pressure in any one spot on the breast-bone, which is the thing to avoid in order to guard against the evil under discussion, and many other plans that would insure a like result will no doubt suggest themselves to the individual reader applicable to his own circumstances.

CROP-BOUND.

Symptoms.—Crop distended; bird standing about in a listless manner; when handled, crop is very full and hard, like a cricket-ball; body, in time, wasting away.

Condition.—In order to fully understand this matter, it is as well to explain to the novice exactly what condition a crop-bound fowl is in. Quite likely it may have recently been noted what a voracious eater this bird had been; how, when the food was thrown down, he gobbled up every atom he could get hold of, and yet, notwithstanding the fact that he has his crop filled to its fullest capacity with food, the bird is practically starving, for the simple reason that, owing to some obstruction to the passage from the crop, he is unable to consume the food thus collected, and ere long, if not attended to, wastes away and dies of starvation.

Cause.—There are many things that cause this complaint. It is even supposed to be possible for a fowl to become crop-bound by swallowing some hard substance too large to pass out from the crop. The correctness of this theory we doubt, and certainly have never come across such a case in practice. Nevertheless we have found all sorts of things, from dried grass to a piece of rag, and even horsehair, as the direct cause of crop-binding; but undoubtedly the most common cause of crop-binding has been a collection of dried grasses.

Under the very common system in which fowls are kept and fed it is so very easy for them to swallow a quantity of indigestible dried grasses that the wonder is there are not far more sufferers from crop-binding than there are. We refer particularly to those fanciers who keep and feed their birds on a grass run. Take a fine tooth rake and rake such a run over carefully, and in nineteen out of twenty cases you will be astounded at the amount of dried grass there is lying about, and which had never attracted your notice. Now, such being the case, it can readily be seen how, when you throw the food on the ground (especially if soft food), the birds in eating such are most liable to also take in a considerable amount of dry grass. This, being tough and indigestible, collects (with other matter) in the crop, and effectually blocks up the passage.

Irregular feeding, such as partially starving the birds and then throwing them a large quantity of food, or keeping them at times short of water, are most conducive to the establishment of this complaint.

Treatment.—When first noticed, and if the bird appears in good condition, it is desirable to see if the obstruction cannot be broken up without being obliged to open the crop. Administer some warm salad oil, and well knead the crop between the fingers and thumb. Continue this, giving more oil, for some little time, and not infrequently will it be found that by this simple remedy the obstruction can be broken up and the food passed on to the gizzard. Another excellent remedy advocated by Mr. Vale is to add as much Glauber salts to warm water as will make the latter taste saline, and knead the crop as before. This is especially good in the event of the liver being at all congested.

But it will at times be found quite impossible to remedy the evil by such means, and that the only way out of the difficulty is to open the crop and extract the contents.

This is not the formidable operation that many may imagine, and carefully performed is rarely attended with ill-effects. Whilst sitting down, get an assistant to hold the bird's legs and shoulders, its body lying on its back across your knees. With a moist sponge damp the feathers slightly on the crop, and part them to each side. Choose a spot near the top of the crop, as free from large veins as possible, as the point to operate on. If there are a few odd feathers in the way, pluck them out. Now, with a lancet or sharp blade of a penknife, make an incision of about an inch and a quarter or a trifle more in the outer skin, in a downward direction and not across the crop. Draw the skin down somewhat, and through the same incision make another incision into the true crop of not quite the length of the former. Through these two incisions insert the forefinger and remove the contents, a small portion at a time, until there remains absolutely nothing in the crop. Should there be any hard collection too large to extract through the opening, insert a blunt-pointed pair of scissors and cut it in two.

Having cleared the crop thoroughly, be careful to wipe away any foreign matter that may have collected during the operation between the skin and the crop; this is important. Then with fine catgut sew up first the crop and then the outer skin with three separate stitches in each; that is, tie off each stitch as made, so that each is separate from the other. The best needle to employ for this purpose is a curved surgical needle, which can be obtained from any chemist, a few of which should always be kept on hand by any poultry breeder.

Do not sew the outer skin to the crop itself, or an unsightly disfigurement in the bird is likely to arise.

Wipe the bird dry of any moisture and place in comfortable quarters, free from draught. Give no liquid for forty-eight hours, but feed on soft food only and let this be of a sloppy consistency, and placed in a vessel—a wooden trough is best. Feed at once, but give sparingly; an eggcupful is sufficient for a start, and may be repeated in from three to four hours, provided the crop is found to be emptied. A raw egg beaten up in a little warm milk and administered in the place of other food is also excellent. For some few days the bird should be fed very sparingly, and under no circumstances given more food unless the crop is completely emptied, and always give warm soft food.

CROP SLACK, PENDULOUS.

Symptoms.—The crop hangs low down, swings about from side to side or bulges out on one side only.

Cause.—The above symptoms may arise from different causes. For instance, it may be due to very irregular feeding—one day starving the birds and the next feeding to repletion, so that the crop is over-extended by the swelling of the grain before it is passed on to the gizzard.

Treatment.—In such a case as above mentioned we have occasionally found that by giving a few drops of tincture of iron (say five or six) in a small quantity of water twice a day, and feeding very sparingly, a cure may be effected in the course of a week or ten days. But, generally speaking, the only effectual remedy is to open the crop, and after thoroughly cleansing the same, to cut out sufficient so that when sewn together as advised in the preceding paragraph (though with a greater number of stitches probably) it will reduce it to its original size. A little forethought must be exercised in cutting the crop the right shape, and the operation will not be found very difficult.

Another Cause.—At times the crop is filled with wind and watery fluid.

Treatment.—Place the bird between your legs, with its head hanging down in front of you. With the left hand stretch out the neck in a downward direction, and with the right hand evacuate the contents of the crop. Professor Hill recommends feeding on bread soaked in brandy and milk a few hours after the operation. We have, however, obtained better results by administering a couple of teaspoonfuls of port wine twice daily, and feeding entirely on oatmeal porridge made somewhat sloppy with warm milk. Feed sparingly, and see that the crop is emptied of food before giving more. If wind should again collect, prick the crop in one or more places with a clean needle.

CRYING CHICKENS—TICKS.

Very rarely indeed will you notice little chickens that are continually giving forth a plaintive "Peep, peep," that are not suffering from the so-called chicken tick. As previously explained in "Feeding and Rearing of Chickens," this insect is, in our opinion, the cause, or primary cause, of death of ninety-nine out of every hundred chickens that die. Few people who have not specially studied this matter would credit the number of chickens to be found, not only in farmyards and small amateurs' yards, but also in the yards of many old fanciers, suffering more or less from these pests. It is no exaggeration to say that during the breeding season, when chickens are fairly plentiful, it is a rare exception for us to go into any poultry yard without finding many so afflicted.

Now, it must stand to reason that if a little chicken of only a week or two old (I have taken fifty off a chick before it ever left its nest) has a score or two of insects larger than the ordinary fowl louse sucking the very life blood out of it, that even if the chick does not actually die there and then, or its constitution become so weakened that it be unable to cast off any other ailment that may be prevalent just at that period, and so eventually dies actually from this ailment, but also from the primary cause of the suction of its life's blood—even if it does not so succumb, yet it is in such an exhausted condition as to make it an utter impossibility for that chick to thrive, and to eventually grow out into anything like as fine a bird as it would have done if in its young days its growth had not been checked, and its health impaired by such ruinous inroads on its constitution. Fanciers and poultry-keepers in general do not pay one half the attention to this matter that they ought to do. They are ever ready to blame the weather, the foods, the stock, or their accommodation for the want of size in their young birds, when, in many such cases, it is due solely to want of attention or from want of knowledge in themselves.

The chicken tick is not only different in appearance to the ordinary chicken louse, being a rounder, broader-bodied insect, but its habits and capabilities differ from this latter parasite considerably. The chicken tick infests only the head, neck, and throat of chickens, and it is useless to examine under the wings, the tail, etc., in order to determine if chickens are suffering from such. If you cannot find either the insects or the eggs of the chicken tick on the neck, throat, or head of the youngsters, it is useless looking for them elsewhere. At the same time it is as well to mention here that the chicken tick is frequently to be found on the body feathers of hens, especially on the breast feathers of broody hens. It was at one time stated that this insect was only to be found on the heads and necks of chickens, and even such a well-known authority as Professor Theobald states in reference to this insect in some of his published notes of 1896, "This species affects only the head and neck, especially of young chicks," whereas we had conclusively proved, and had published the fact some years previously, that repeatedly were such to be found on the old birds, and that it was undoubtedly owing to the fact that such were upon the old hen that the parasite was imparted to the youngsters. It is, however, only fair to add that, apparently, at the time mentioned, Professor Theobald had only just become acquainted with this insect, stated by him to belong to the genus Goniodes, and that he was probably merely quoting the opinion of the gentleman who had forwarded the same to him, and not his own opinion formed from a study of the insect's habits.

Another characteristic of the chicken tick showing a marked difference to the habits of the hen louse is that, instead of laying its eggs in clusters as the latter does, it invariably lays them singly, at, or nearly at, the root of each tiny piece of fluff or feather on the head. Occasionally two eggs—we have noted three—may be found on the same feather, but as a general rule never more than one is to be seen. Not only do these eggs differ considerably in shape to the ordinary louse egg, being of an elongated shape, but instead of being of that well-known dull white in colour, they have a shiny transparency, and as the insect matures they become more or less of a darkened yellow, and on the emersion of the parasite the shiny white skin of the egg remains attached to the feather for a considerable time—frequently till the feather moults out.

A very marked difference in the capability of the chicken tick as compared with the hen louse is found in its inability to crawl. We presume there are few poultry-keepers who have not experienced a very lively sensation after handling or plucking a fowl that sadly needed a good dusting with insect powder, and who have, perhaps, wondered at the incredibly short space of time that it takes an ordinary fowl louse to travel from the hand to the small of the back. But the chicken tick cannot do this. Place the chicken tick on to the table, a piece of paper, or on to your hand, and you will find that, although it may make a few spasmodic efforts to walk, it quickly gives over and remains passive, the fact being that it is unable to crawl excepting by the aid of the feather's webbing.

Chickens reared artificially are not affected by the chicken tick, unless they come in contact with other chickens that have been hatched under hens. Only last season we knew of a case where a month old chick that had been reared under a hen was placed with sixty other chickens artificially reared, and within a fortnight every single one of the chickens were more or less suffering from the chicken tick. Neither, would we remark, is the evil of this insect confined to little chickens. Repeatedly do we find birds of three, four, and even six months old infested with them on the heads, or, more especially at this age, on the necks, and although these can, of course, far better withstand their ravages, yet it is only common sense to suppose that they must hamper the fowl's growth.

To Find Ticks.—To always find the ticks themselves is, to the novice especially, a somewhat difficult matter, but there is, practically, no difficulty in determining whether a chick is suffering from them or not. Take the small blade of your pocket-knife, and, commencing from the base of the upper mandible of the beak, carefully part the fluff or feathers on the top of the bird's head. If the chick has the ticks, you will find the shiny white eggs of this insect singly deposited at, or nearly at, the roots of different items of fluff or feathers, and on observing these it is sufficient for you to determine that the chicken has the ticks, as without the tick the eggs could not be laid.

Treatment.—Obtain some carbolic oil of the strength of 1 in 20. Any chemist will mix it for you of the right strength. This remedy is as good and as inexpensive as any that we know of. Pour a little of the oil into a saucer; take a chick in one hand, and dip the tips of two fingers of the other hand into the oil. Shake the hand, and apply the oil to the head, neck, and a little under the throat of the bird. Do not put it on heavily, but see that all fluff or feathers on these parts have it applied lightly but thoroughly down to the roots. To apply it heavily is, probably, to cause several chickens in a few hours' time to appear blind; and we would here remark it is a bad plan to apply this oil to a brooding hen's breast for the same reason. However, should you accidentally apply too much, and the chick get its eyelids closed, bathe the same carefully with warm water, opening the lids and bathing all clear, and then dry thoroughly.

After Effects.—Probably many have noted chickens of a few months old running about with bare heads and bare necks. This is almost always due entirely to the youngsters having been sufferers from the chicken ticks. Pick up such as these, and very likely you will not discover either a tick or a tick's egg on them; but it simply means that these have fallen off with the feathers, for, as we before remarked, the tick does not and cannot crawl on the flesh except by the assistance of the feathers, and although in this case the trouble is now passed, the after effects—viz., stunted growth—can never be repaired.

DEAD ON NEST.

"My fowls seem perfectly healthy, and yet I am continually finding them dead on the nest." Such has been the sum and substance of many who have asked us for advice. "This hen, for instance, appeared quite well yesterday and ate a good breakfast, and yet when I went into the fowl-house this afternoon she was lying dead upon the nest, and you can see for yourself she is in splendid condition." Yes, it was this "splendid condition" that caused the mischief.

A post-mortem examination of such a fowl will reveal the following:—First, you will be surprised at the enormous amount of accumulated fat, then you will notice the contents of one or more broken yolks, and then, leaving out of the question the condition of the liver, etc., you will find that the oviduct is probably much inflamed. The accumulation of fat has more or less choked the mouth of the oviduct, and the bird, in its endeavours to pass yolks into the same, has ruptured them itself, and inflammation has set in.

Where cases similar to this arise, it is advisable to treat the remaining fowls as recommended under the heading of "Eggs—soft-shelled."

DIARRHŒA—CHOLERA.

Under this heading we propose to deal first with ordinary cases of diarrhœa in fowls and chickens, and afterwards with somewhat similar symptoms in a more virulent form, known as cholera.

Symptoms.—Frequent excrements of a watery nature, usually dark in colour at the commencement, and changing to green, greenish-yellow or yellow.

Cause.—Provided the bird is not subject to some disease, it is usually due solely to improper feeding. Take as an example a brood of little chickens, especially if in a rearer. How frequently do we find these suffering from diarrhœa, the cause of which is easily explained, for, as a rule, such cases are usually found amongst novices at chicken-rearing, or in the yards of experienced fanciers, who are unable to look after the chickens themselves. It is either a case of mistaken kindness or a desire to save trouble. The attendant goes round to feed at what he thinks, or is told, the proper time to do so. On arriving at the chickens, he is firmly convinced that his main or sole duty is to feed them. Down goes the food, and he passes on to the next lot, until he has completed his round, when he returns feeling satisfied that he has done all that was required of him. But his first duty was really not to feed the chickens, but to see that they had cleared up all that he had given them the time previous, and if they had not done so, to scrape it all up, clean himself, and to leave them for another hour or two (according to their age) before he gave them any fresh. Food thrown down, or placed in a vessel, and left for the chicks to run over, soon becomes foul and sour, and if eaten in that state, as it frequently is, diarrhœa is bound to make its appearance sooner or later. The reason that chickens cooped with a hen are not so subject to this complaint as those reared in a foster-mother, is simply that the old hen probably clears up what the chickens leave.

Preventatives.—Never feed stock birds or chickens with more food than they will eat up readily. Exception has to be made in the case of chickens only a day or two old; but as soon as they are strong enough to run about well, then never leave food for them to trample on and foul, unless it be the last feed at night, when rather more grain than is required may be allowed, and will serve as an early breakfast in the morning; but this would not be tainted. Injudicious feeding on soft food is where nine-tenths of the trouble lies. Feeding on grain alone (commonly known by the name of "dry food," and which consists of canary, millet, and many other small seeds) until the chickens are, say, two months old will be found most desirable, when one has a careless attendant, in preventing diarrhœa; though even with this feeding we have known a man so careless in throwing down far more than was required that when going to attend to them because they were suffering from this complaint we scraped up half a pailful from the foster! But with ordinary care "dry food" is a great preventative of diarrhœa.

Treatment.—With full-grown birds the best treatment we have found for this trouble is to first of all give a teaspoonful of treacle or sweet oil, followed in a few minutes by a teaspoonful of castor oil. We would here mention again that in giving castor oil it will easily run off the spoon if the latter is first dipped in milk. When the bird has been well purged, say from four to six hours, administer five or six drops of chlorodyne in a teaspoonful of warm water; repeat twice or three times daily if necessary.

If the case of young chickens, give a little sweet oil, followed in a couple of hours by one to two drops (according to age) of chlorodyne in a teaspoonful of warm milk, repeating this latter, if necessary, two or three times daily.

Both stock birds and chickens suffering from diarrhœa are best fed on soft food only. Oatmeal porridge made with milk, and an occasional change of dry boiled rice with powdered chalk sprinkled over it, we have found most suitable. No green food.

Usually rice that is cooked for poultry is prepared in anything but a satisfactory state; generally, it is all wet, clammy, and sticking together. Such is not the kind that we wish to describe when we mention "dry boiled rice." As the extra trouble involved to boil rice properly is so very little more than that required to boil it improperly, we feel sure that in every case it must be from want of knowing the correct method, and so it may be worth while to here mention the proper mode: Place the rice in a pail or other convenient receptacle, pour cold water over it, and mix it well. Repeat this four or five times (more, if necessary) until the rinsing water remains clear. Have ready a saucepan of boiling water, allowing as much as a gallon of water to 1 lb. of rice, so that the rice can move about freely when boiling. Under these conditions a few minutes is sufficient to cook the rice, which should meanwhile be watched, and when the grains are well swollen, and just commence to crack, it is time to immediately strain off through a colander. A spoonful of salt should always be added to the water previous to putting in the rice.

It is now necessary for us to deal with that other portion of our heading, viz., cholera; but in doing so, we desire to say at the start that we never cured a single case that we felt sure was suffering from this disease. Still, there are certain matters connected with the subject desirable for every poultry-keeper to know.

Symptoms.—Very similar in the early stages to those given in the case of ordinary diarrhœa, the excrements frequently becoming white and frothy, streaked with blood, and most offensive. Frequently the crop has plenty of food in it, but the bird is lifeless, unsteady in its walk, eyes sunken, comb purple in colour at edges, limp and flabby; feathers around the vent wet and matted together, with ends of wings trailing upon the ground; breathing hard and short.

The Disease.—The disease is caused by a germ which is capable, under favourable conditions, of multiplying at an enormously rapid rate in the bird's blood, so much so that in the course of a few days—in some cases even hours—the vitality of the whole body is destroyed, and the bird dies either in convulsions or in a state of utter helplessness.

Treatment.—Administer a pinch or two of Epsom salts, and in a couple of hours' time follow this with a teaspoonful of warm water, in which is added five or six drops of chlorodyne. Repeat the latter dose two or three times daily. Allow plenty of water and nourishing foods, such as oatmeal porridge, a little meat, raw egg, etc. In severe cases omit the salts, and give the chlorodyne at once. Naturally, all affected fowls should be isolated and placed in some comfortable abode protected from the sun.

Cause and Predisposing Causes.—The actual cause is contagion. The predisposing causes are—heated atmosphere in the fowl-house; filth, combined with excessive heat; decomposed vegetable and other matters; improper feeding, and unhealthy sanitary conditions in general.

Concluding Advice.—The first loss, when this disease arises in a yard, will probably always prove the cheapest in the end. By this we mean that as soon as it is established that any fowl or fowls are suffering from this complaint, they should at once be caught, killed, and their bodies burnt. That the remaining healthy ones should be at once removed to fresh, clean quarters, and a sharp eye kept upon them to note the slightest signs of ill-health, which, if found, should be at once removed. On the removal of the healthy birds, each should be given a pinch or two of Epsom salts, and the dose repeated in three days' time. The old run should be well sown with quicklime, and no birds allowed on it until it had been thoroughly soaked with rain several times. The house, too, and all appointments should be lime washed with fresh slacked lime, and the whole made absolutely clean.

DIZZINESS—STAGGERS.

Symptoms.—Running backwards, throwing up its head, running around and falling down, sometimes dead—equivalent to symptoms observed in a horse suffering from a like complaint, and. in our opinion, arising from the same causes, and requiring similar treatment, hence our reason for, many years ago, having designated this complaint by the same name as is known to veterinary surgeons, viz., "staggers."

Cause.—Pressure of blood on the brain and the breaking of a blood-vessel.

Predisposing Causes.—Possibly in some causes hereditary, but usually from over-feeding or feeding on too stimulating as well as too fattening foods, such as hempseed. In every case that has come under our notice the subject has either been fed with a goodly proportion of maize or potatoes, or has been grossly over-fed, and, in one instance, a premature moult has been induced, during which time the bird had been fed largely on hempseed. It will thus be gathered that by over-stimulating the system, or by over-feeding, or by feeding on very fattening foods, this complaint is liable to arise.

Treatment.—In mild cases, where the bird has merely a slight unsteadiness in its walk (N B.—This symptom should not be confounded with lameness), a good pinch or two of Epsom salts, repeated every day for two or three days, and by twenty-four hours' fasting, and at once putting a stop to the predisposing causes, will probably effect a cure. But in more severe cases, especially if the bird actually falls down in a more or less unconscious state, bleeding should be immediately resorted to. Take a sharp small blade in your pocket-knife or a lancet, and make a small incision (longitudinally) in the large vein under the wing, and let the blood flow fairly freely in the case of an unconscious bird, anyhow, until consciousness is restored. Then press the wound tightly, and apply powdered matico; a bird that will not regain consciousness under such treatment is hardly worth the trouble of reviving, for another attack (most liable to arise) will in all probability safely carry him over to the great majority, but if it is desired, stop the bleeding (Professor Hill recommends from four to six drachms to be taken from a mature bird), and apply ammonia to the nostrils and turpentine to the back of the head.

When the operation is over and consciousness regained, administer a teaspoonful of slightly warmed treacle, and in five minutes' time follow with a teaspoonful of castor oil; if an ordinary teaspoon is used to administer the oil, or, in fact, whatever be used for this purpose, it is advisable before putting the oil in, to first of all dip it into milk, as then the oil will readily run off. Keep the bird on a low, unstimulating diet for some little time to come.

DOWN BEHIND—PROTRUSION OF EGG-PASSAGE.

Some writers seem to imagine that the term "down behind," well known amongst poultry breeders, applies to one single complaint—namely, the protrusion of the vent or egg-passage. As a fact, there is another complaint equally as well known by the same term of "down behind"—viz., rupture. We will take this latter complaint first.

Symptoms.—Head erect, abdomen almost or quite touching the ground and thrown well forward; probably we cannot give a better idea of a fowl suffering from this complaint than to quote the words of a certain poultryman, who exclaimed when he first saw a case of this sort, "It looks for all the world, sir, as if it was walking on its hind legs."

Cause and Predisposing Causes.—Over-feeding or feeding on too fattening foods, such as maize and potatoes, has probably made the fowl so internally fat that in its endeavour to pass an egg it ruptures itself.

Treatment.—Obtain a low box, so low that it is impossible for the fowl to rise up. Having pierced a sufficient number of air-holes in it, make a comfortable nest of hay as if for a sitting hen. Administer a level teaspoonful of Epsom salts, and repeat half the dose in three days' time. Place the bird in the box, and remove her but once daily to feed and water for about a quarter of an hour's duration, and then at once place back in the box till next day. Give but one small handful of grain (not maize) per day, but chopped green food may be allowed. Keep this treatment up for three weeks or more if necessary. We never had a case that we did not cure by this method.

As regards the protrusion of the vent or egg-passage:—

Symptoms.—There can be no mistaking the symptoms of this complaint, the vent pouch, and in severe cases the oviduct, is hanging out; we have known it to be out a foot in length and trailing upon the ground.

Cause.—Again over-feeding or feeding on too fattening foods, such as maize and potatoes, are, in our opinion, the sole primary cause of this complaint; anyhow, such has always been the case with the large number of fowls that we have treated suffering in a like manner. Owing to the accumulation of internal fat, the straining to pass an egg has been so great as to force the protrusion seen.

Treatment.—Make a strong infusion of tea in a kettle of water, and let it boil for a few minutes on the fire. Remove, and let it stand till only comfortably warm, and then with a sponge well bathe the protrusion, carefully removing any foreign matter that may be adhering to same. Now gently place back the protrusion.

Whilst the tea has been brewing, obtain a narrow wicker-work basket, or a wooden box with plenty of ventilation holes will answer the purpose; place a little hay at the bottom, and towards one end of the box a small soft cushion, or an extra quantity of hay, so that the bird when placed therein may have its vent raised up well.

Having finished the operation tie the bird's legs together with tape, and place in the hamper or box with its shoulders somewhat down and its vent well up. If the hamper is not an exact fit, care should be taken to so pack the bird with hay at the sides, etc., that she cannot shift her position. Leave her thus for at least twelve hours. At the end of that time remove the bandage from her legs and place her in an exhibition pen to feed for about a quarter of an hour. Feed very sparingly on sopped bread and milk. If the protrusion again makes its appearance repeat the operation with the warm tea, but in any case place her back as before in the basket, after having carefully washed away any excrements that may have collected around the vent or in the basket. Continue thus for three or four days if necessary, and if after each feed of bread and milk twice daily no protrusion is again observed, the time of liberty in the show pen may be gradually extended. When the bird appears to be quite recovered in this respect, administer a couple of teaspoonfuls of olive oil, and inject half an ounce. The trouble now is probably to get away an egg, and for this see "Egg-bound."

As an example of what can be done in a case of this sort, and as also showing how even experienced fanciers lose many valuable birds from this complaint simply for the want of a little knowledge, we might mention a case that occurred a few years ago. We were visiting a well-known Indian Game fancier in the West of England, and shortly after our arrival were looking at several specimens put up in the show pens, one especially attracting our attention on account of her grand lacing and shape. On our exclaiming what a beauty she was, our friend replied, "Yes, but she'll be dead in less than a week; turn her round, and you will see for yourself." The bird was facing us at the time. but on turning her round as directed the protrusion was seen dragging on the ground covered with chaff and dirt. This was late at night, but we promised to operate on the bird next morning. Fancier-like, the next morning we were so engrossed on Fancy topics that the poor bird was quite forgotten till noonday, and we had to leave before two o'clock. However, although this was one of the worst cases we have ever seen, it being quite impossible to place back much more than half the protrusion, a glance in the basket before we left showed that the whole of it was then replaced. Within three weeks of this day the hen won the champion prize at one of the largest shows in the West!

Taken in time, and a little judgment used in regard to getting the egg away, which is probably the immediate cause, and it is rare indeed for a case of this sort to end fatally. But naturally a bird that has once been so affected is very liable to become so again if the predisposing causes are not discontinued. Carefully watch such a bird, and if at any time it is found she is getting too fat, give her a pinch or two of Epsom salts and in other ways treat as recommended for "soft-shelled eggs"

EGG-BOUND—DOUBLE YOLKS.

Symptoms.—The bird may frequently be found crouched up in the corner of a run, or some other more or less secluded place. Going frequently to nest without laying; purply colour of face and comb; walking stiffly with legs wide apart and vent carried low to the ground, are one and all possible symptoms of this complaint. But as regards the carrying of the vent low down, a similar symptom will be apparent in the case of rupture—the effect not infrequently of egg-binding.

Cause.—According to some authorities it is due to the size of the egg or the smallness of the oviduct; such possibly may be the case when discovered, but we do not agree that either was the actual cause in the first instance. Hundreds of cases have come under our immediate notice, and in no single case has the cause been other than over-fatness.

Instead of the oviduct being in a healthy muscular condition, well able to expel the egg, the accumulation of fat has absorbed the muscles; the whole is weak and inactive, the strain necessary to expel the egg, owing to the fatty condition of the oviduct, is far greater than that required in a normal state, and yet the requisite muscles are either non-existent or are in an unhealthy condition.

With reference to a double-yolked egg being at times the cause of egg-binding, here again we consider that over-fatness of the fowl was the sole cause of the double-yolked egg, and if such was the case, then Q.E.D. over-fatness was the cause of egg-binding.

No case of a hen laying double-yolked eggs has ever come under our notice when the bird was not, at the start anyhow, decidedly too fat. Now let us consider for a moment how a double-yolked egg is made possible. There is only one answer to this, viz., by two yolks meeting together in the oviduct previous to reaching that portion of the same that clothes the yolks with the shell. Yes, but if two yolks were placed in the oviduct from the ovary at about the same time, then a double yolked egg would be found—we have met with quite a few—little, if any, bigger than an ordinary-sized egg. Those large double-yolked eggs that are frequently to be obtained, you would find if you hard-boiled them and then examined the contents, had not only two distinct yolks, but each yolk had its separate covering of albumen. Now if this proves anything, it must prove that the first yolk was not deposited in the oviduct at the same time as the second, but some considerable time before, inasmuch as it had not only had time itself to pass down that portion of the oviduct that provides the albumen, but that the secreting glands of this portion were enabled to clothe the second yolk also in a similar manner. Thus it is evident that the first yolk came to a standstill just previous to entering that portion of the oviduct that provided it eventually with a shell, and that it remained there some time—long enough to allow the second yolk to also be clothed and to catch it up. Why? First, in the case of over-feeding or feeding on too fattening foods such as maize or potatoes in any quantity, the effects in the oviduct are always apparent in the first instance at the lower portion; thus a yolk might pass down some considerable length of the oviduct before any of the ill-effects of over-fatness affected it; and so in this case the yolk passed comfortably along until the muscles of the oviduct at the spot at which it had arrived were found weak and inactive, and there it rested. Possibly the bird endeavoured to pass it on, but the strain was great, and as the inconvenience was at the time of no great account, it gave over trying. In the meanwhile, the other yolk joined on to the first, and the inconvenience and desire to lay are increased greatly; straining takes place, and if not quickly passed out, egg-binding is the result.

Predisposing Causes.—Feeding on much maize or potatoes, or over-feeding on any ordinary poultry foods—especially if birds are in close confinement.

Treatment.—If the weather is at all cold, bring the bird into the house, and place in a hamper near the fire where she is comfortably warm. Administer a couple of teaspoonfuls of olive oil, and inject double the quantity. If the egg be not laid within an hour or so prepare some warm soap and water and inject about an ounce. If necessary repeat in an hour or so's time. Bread and milk sop is the most suitable food for the next two days. Give no foods likely to induce laying—such as meat, condiments, etc., until she has fully recovered and weighs less.

EGGS—SOFT-SHELLED.

The usual advice tendered to those who ask why their fowls are laying soft-shelled or shell-less eggs is that they are not providing them with enough lime, in the shape of oyster-shells, chalk, etc., to enable the birds to form shells for their eggs. The extraordinary part of it is that if these cases are analysed it will be found that in almost every instance the owner has provided them with an abundance of such materials; in fact, there is hardly a want of his fowls that he has not gratified to its fullest extent. This eagerness to provide for every want of his birds has in reality been the true cause of the trouble.

We are of opinion that if a hen be kept in a wooden box and no grit, etc., provided her, it is just possible that she might not be able to procure sufficient material for the clothing of her eggs with an ordinary shell. But we believe it would be impossible to keep a fowl on the ground, and in health, that could not secure a sufficiency of such material. Anyhow, we can safely say this, that never in our life have we come across a case of a hen laying soft-shelled eggs that was caused by an insufficiency of lime or chalky substances being provided.

Cause.—Unhealthy conditions of the lower portion of the oviduct; unusual production.

Predisposing Cause.—Overfeeding or feeding on too fattening foods.

When the yolk leaves the ovary it passes into the oviduct, an organ of about 2ft. in length, the duties of which are to clothe the yolk first with the white, or albumen, then with the two thin membranes, and finally with the shell. Now, as previously explained under the heading of "Egg-bound," if the bird is internally fat—fat always accumulates internally before outward signs are visible—the secreting glands of the oviduct which supply the various coverings to the yolk are hampered in their work, disorganised, inactive, and are unable to properly perform their duties.

As also previously mentioned, we have always found that the lower portion of the oviduct is the first part of this organ to show signs of the ill-effects of overfeeding. Consequently, during the first stages of over-fatness the yolk on passing into the oviduct enters the first portion of same, and is duly covered with the several layers of albumen; it then passes on to the second portion of the oviduct and receives the thin membranes; but on its entrance to the third portion of this organ the secreting glands cannot supply—owing to their disorganisation—the material for the shell, and the egg is therefore laid without this covering.

Carry the over-fatness of a fowl to inordinate proportions, and the secreting glands of the whole oviduct are disorganised, and yolks will then, as we have ourselves seen, be laid almost in exactly the same condition as that in which they left the ovary.

We are disposed to think that there is just one other cause that might account for a healthy fowl laying shell-less eggs, namely, in the event of its laying—as some hens will—two eggs within a few hours of each other. In such a case it is just possible that the secreting glands, after covering the first egg with a shell, had not sufficient time to collect similar material to clothe the second egg. But such instances, if they ever do occur, we feel sure must be very rare, and it may be taken for granted that in ninety-nine out of a hundred cases the cause of soft-shelled eggs is due solely to partial disorganisation of the oviduct, and that this is caused in the vast majority of cases from nothing more than over-feeding or feeding on too fattening foods, such as maize or potatoes, in considerable quantity.

Treatment.—Administer two or three good pinches of Epsom salts, and repeat dose in three days' time. For the next week or ten days, according to the condition of the fowl, give but one small handful of grain per day, no other solid food, but green food may be allowed *ad lib.* Naturally the overfeeding or the feeding on too fattening foods must be discontinued in the future, or the same trouble will arise again.

EGGS—WITH DARK SPOTS.

Not infrequently on breaking open an egg a dark spot or spots are found therein. These spots are congealed blood, caused by the breaking of a blood vessel internally.

Predisposing Causes.—Usually the predisposing cause is the same as in the preceding paragraph, viz., overfeeding or feeding on too fattening foods, such as maize or potatoes in considerable quantities. Stimulating the system to excess with condiments will produce a like result; but, in the majority of cases that have come under our notice the birds have been far too fat. Further, though this did not always apply, we have usually found where blood spots occurred in eggs that the fowls were in the habit of roosting on perches some considerable distance from the ground. Supposing a fowl to be internally very fat, and in getting down in the morning from a high perch it should happen to make a slip, it can easily be seen how very liable it is to break a blood vessel. We remember so well a few years ago a fancier bringing a hen to us that was layings eggs with blood spots in them, and asking for advice. We at once pronounced the bird far too fat, but at the same time suggested that his perches were placed high up in the fowlhouse. This, however, was not so, as the only two perches in the house were on a level 2½ft. from the ground, and a manure board underneath. A short time afterwards he again called, and said that on going to his fowlhouse he found that this very hen did not roost with his other birds, but on a rafter just underneath the eaves, and in a most difficult position for alighting comfortably on the floor. Now, the whole of his remaining stock were equally as fat as this hen, and yet she was the only one that ever laid blood spots in her eggs.

Treatment.—The same as advised in the case of "soft-shelled eggs." If this does not succeed, add some tincture of iron to the drinking water, in the proportion of about a quarter of a drachm to each pint of water; but in any case adopt the Epsom salts, etc., treatment first.

EGGS—WITHOUT YOLKS.

In the course of a twelvemonth a good many eggs are laid, varying in size from about that of a marble to a small average egg, containing nothing but albumen, the yolk being entirely absent. We have already shown that the ovary, the organ that produces the yolks, and the oviduct, which clothes the same with their several coverings, are, more or less, entirely independent of each other. As demonstrated, if the ovary is active and places a yolk in the oviduct, and the latter is more or less inactive, it cannot place all the necessary coverings on the yolk that it ought to. The converse to this is what happens in the case of yolkless eggs. The ovary has ceased—for the time being—to produce yolks, but the oviduct is still in a healthy, active condition, the secreting glands of which are full of those materials for clothing the yolks. No yolks are, however, being placed into it to clothe, consequently it forms an egg on its own account, but, naturally, minus any yolk.

EGGS—EATING OF.

An unnatural habit, very common in some poultry-yards, is that of hens eating their own product. We believe this habit is solely set up by the fact that either soft-shelled eggs have been dropped by some of the fowls, or that an ordinary egg has inadvertently become broken. The hen then pecks at it, likes the flavour, and wants more. To have an egg-eater in the same pen with other birds is pretty sure to educate the lot to become cannibalistic in their habits. She should at once be removed.

Treatment.—Various methods have been advocated as a cure for this nuisance, but the only plan we personally ever found generally successful was to watch the birds and remove the culprit or culprits. If neither is at the time laying the task is easy. Having placed them in a run by themselves, each day bring in (one for each bird) an egg that has had its contents extracted, and which has been refilled with mustard and pepper, and place about in the run. Quite often a fowl will consume the first few eggs thus placed before it with evident relish; but if the supply is kept up the desire to attack eggs is eventually killed. Further, we have known inveterate egg-eaters to be confined in a place by themselves, and to pass through the moult, being thus alone for, say ten weeks, and to have in that time forgotten all about the flavour of an egg.

Of course, the "disappearing egg" nest is an excellent preventative if you can only get the fowls to lay in it, but some will not.

It is advisable to mention that it does not answer to leave one or more of these mustard eggs lying about day after day without attention. They should be kept clean, and if not attacked in one place removed to another position of the run or fowl-house.

EGGS—PUTRID.

It may be news to some to learn that a hen can lay a rotten egg! Several cases have, however, come to our notice where a fowl has laid an egg perfect in every particular, shell, yolk, and albumen, and yet as rotten as an addled egg that had been sat upon for a month.

We can only account for such a phenomenon by the supposition that the bird was unable—probably from over-fatness—to expel the egg, and had carried it so long as to set up putrefaction.

Other so-called putrid eggs have been sent us from time to time, which have nothing to do with an egg at all, but are tuberculous growths formed like an egg and passed out by the fowl. And yet again we have known these tuberculous growths to be passed down the oviduct and to receive a perfect shell as in an ordinary egg. The act of cooking a good egg laid by a fowl that had passed out one of these so-called putrid "eggs" would probably destroy the tuberculous germs; but it should be remembered that the probability is, many germs of tuberculosis are contained in such eggs, and that if the egg is only lightly cooked it is possible to transmit the disease to human beings.

FEATHER-PLUCKING AND DISEASED FEATHERS.

As a preventative to feather-plucking many have advocated giving employment to the fowls, such as a scratching shed, with corn buried in it, and such like; others—and at one time we were amongst the number—have been under the impression that great thirst has caused the birds to assume this habit of plucking feathers from the bodies of others as well as their own. We are, however, now firmly convinced that neither the want of exercise nor an insufficient supply of water has anything to do with the real cause of feather-plucking.

For many years we have always said that insects were the primary cause of feather-plucking. We have never yet found a bird just starting to be feather-plucked that a good dusting of insect powder would not have proved beneficial to it; and we, therefore, thought that a probable solution to the cause of this complaint was found in a fowl perceiving an insect crawling on the feather of another bird, plucked at the insect, and, in doing so, pulled out also the feather and swallowed both, and in course of a little time obtained a liking for the consumption of feathers. As a fact, we still believe this theory to be correct; but it only partially covers the cause of this detestable habit.

The Chief Cause.—We are indebted to Professor Theobald for further enlightenment on this subject. He states: "The disease, for such it is (not vice), is due to a minute sarcopt mite, known scientifically as the *Sarcoptes lævis.*" The mites are to be found at the base of the feather shafts, amongst a white powdery substance. It is owing to the irritation caused by these mites that the fowls pull out their own feathers and those of others. As Professor Theobald says, "It is well known that animals will destroy one another's parasites, and this possibly may be the same in poultry."

After reading the above, we closely studied certain pens of feather-pluckers, but failed to detect a single bird in the act of plucking out its own feathers, though we saw innumerable instances of birds plucking out the feathers of others. All these birds were, however, more or less feather-plucked before we commenced our observations. We, therefore, placed two other hens that were quite free of the disease into two pens that were affected. For ten days after not only were there no signs of these two plucking out their own feathers, but what appeared more strange, none of the habitual feather-pluckers in the same pens attempted to strip the new comers, though they had after the first day or so all settled down comfortably together. But at the expiration of this time we distinctly saw one bird pull out three feathers, with difficulty, from its crop, and the other two or three feathers from its fluff. This was in the afternoon of one day, and next morning by twelve o'clock one of the birds was almost naked.

As these mites breed very rapidly, and as they are easily transmitted—especially during copulation—to others, all the inhabitants of the same pen are liable to quickly become similarly affected unless proper precautions are immediately taken to prevent it.

Thus it will be seen that the very common advice given for this complaint, viz., to bury corn in some portion of the run, and in other ways give employment to the birds, although good in itself, is no cure for the complaint.

Prevention and Cure.—If it be possible to detect the bird on the first appearance of the symptoms of this disease, the removal of the same would prevent it from spreading to the occupants of the same pen. But the probability is in most cases where feather-plucking is observed, that the mites have already secured a certain footing on others besides the one who gives evidence of the complaint. The safest plan is, therefore, to give each bird a dressing with one part creosote and thirty parts vaseline. Rub well into the roots of the feathers. As a rule, the dressing in this manner of the neck, breast, abdomen and "parson's nose" is sufficient. Professor Theobald also says that the mites readily yield to treatment with oil of cloves rubbed into the invaded area.

Another Cause.—It is evident from the writings of the above-named authority that he has little faith in the theory that the blood at the base of the shafts is ever a cause of feather-plucking. We have, however, not the slightest hesitation in asserting that not infrequently is this the sole cause; but, as a rule, when such is the cause, the effects are seen only in plucked hackle or crest. It is never wise to keep Houdans or Polish together in close confinement during the moulting season; especially is it undesirable to keep a cock bird with hens, as the temptation to pluck the juicy quills filled with blood growing on his head is almost irresistible. But this form of feather-plucking happens, as a rule, at a different period of the year to what has been described as the feather-plucking disease. The latter is mostly confined to the spring and early summer months.

Bars across Feathers, etc.—It is not uncommon to find when a fowl has moulted into its new plumage that there are bars or notches quite hollow in the webbing, as if the same had been cut out. Usually, too, such a bird takes considerable time to moult fully, or rather, we should say, to fully grow its new feathers. It seems at times as if there is something that prevents the sheath of the feather from bursting. Instead of being juicy, it is dried up. We believe that mites (probably the same that cause feather-plucking) are alone accountable.

Now, it would not do to adopt the remedy previously advocated on a bird that had partially grown its new feathers, and one that we desired to exhibit. The mixture would spoil the look of the plumage. But to prevent such a spoliation of feathers in a bird that we hope to exhibit after it has moulted, act on the instructions previously given, just before an old bird starts the moult, or, in the case of a young bird, just previous to its commencing to moult into adult plumage.

In order to remove the dried-up sheath on a bird's tail without injury to the plumage, soak the same well in warm water, and it will easily come away.

GASPING FOR BREATH—GAPES, ETC.

No sooner does the average poultry-keeper see his chickens opening their mouths and gasping for breath than he at once comes to the conclusion that they are suffering from gapes. We have been called in time after time to view chickens or Pheasants that were supposed to be dying from gapes, and in the majority of cases they were suffering from a totally different complaint. The simple fact that a bird opens its mouth and gasps for breath is no criterion at all that the bird has gapes; in the majority of such cases it will be found that it has either contracted ordinary roup (See "Running at the Nostrils") or diphtheritic roup (See "Cheesy Growths in Mouth"). Nevertheless, many cases of both chickens and Pheasants suffering from gapes do undoubtedly occur, and a considerable number of both young Pheasants and chickens die annually from this complaint.

Symptoms.—Reaching out of the head and neck, and gaping or gasping for breath, wheezing, ruffled plumage, generally depressed; though in the earlier stages, with the exception of occasional gaping, but little appears amiss with the bird.

Cause.—A small, reddish-coloured worm.

Origin.—For many years this disease has baffled the efforts of poultry-keepers to find out its origin. We are once more indebted to Professor Theobald for its solution. If the trachea and bronchi of a bird suffering from gapes be opened, a number of small—generally forked—worms will be found. In reality these forked worms consist of two, the male and female, the former being about a third only of the length of the female. From the commencement of copulation the male remains firmly attached to the female, so that it is impossible for the latter to lay her eggs. At times both embryos and eggs are found in the female, and the only possible way that these can escape is by the bursting of the female's body; and this, as a rule, takes place after the worm has been coughed up by the fowl. It can readily be understood how that worm, with its body filled with embryos and eggs almost to bursting point, has but little vitality left in it, and is much easier of being coughed up by the fowl in this condition than when in full vigour. After its expulsion it dies, and in a few days its body bursts, freeing both the embryos and eggs.

If the surroundings are favourable, the eggs will hatch in as short a time as seven days; or if not, as long as forty days. Damp soil, or around drinking vessels, or even in the water are the most favourite localities. From thence they are picked up by the fowls, either whilst eating their soft food, corn or grass, or when drinking, and thus is the complaint spread from one to the other.

Yet still the question remains: How is it possible for the gape-worm to first make its appearance in the poultry-yard? The answer is very simple. Besides wild birds such as Pheasants and Partridges being affected repeatedly by this complaint, and being liable to roam over the ground used by the poultry, and thus expectorate some of these worms, a host of other wild birds, such as the Martin, Starling, Linnet, Rook, Crow, and even the ever-present Sparrow, are not infrequently infested with the gape-worm, and thus in many different ways may the complaint originate, and the prevention of it doing so is almost an impossibility.

Treatment.—Affected birds should be kept from the healthy stock. At the same time, it is most desirable that those that are affected should be continually moved from one place to another, as, if kept on the same spot, they may be cured and take the complaint again time after time. Dryness and sunshine are the gape-worm's chief enemies.

Turn a convenient-sized box upside down on a table. At the back make a close-fitting door, large enough to pass the chickens through. In the front of the box insert low down a fair-sized pane of glass, so that the chickens can easily be seen. Place the affected birds inside, and with a pair of small bellows blow in a mixture of powdered chalk and finely ground camphor, 1 oz. of the former to ½ oz. of the latter; or "Camlin powder" is equally as efficacious.

Care should be taken, by closely examining them through the pane of glass, that the chickens are not too much overcome by the fumes, and that as soon as this appears at all likely the box should at once be lifted off. Allow them to remain away from their rearing-ground for some few minutes, so that they may expectorate some of the worms, which should be collected and burnt. Any bird that dies from this complaint, the head and neck should at least be burnt, as only by this means can future developments of the complaint be prevented.

As a preventive against reinfection, add 3 drachms of salicylate of soda to each quart of drinking water. If the outbreak is general amongst the fowls, it is desirable that all should have similar drinking water supplied to them.

The houses, vessels, and ground, if possible, should also be disinfected. Professor Theobald recommends watering the ground with a 1 per cent. solution of sulphuric acid. The same dressing may be employed for the houses, coops, etc. Quicklime thrown on the ground will answer the same purpose, but in such circumstances it is not advisable to let the same be again occupied till it has become thoroughly drenched with rain or artificially watered in an efficient manner, so that every particle of lime has been slacked.

It only remains to add that, although hundreds of chickens are frequently subject to this complaint, it is very rare to find full-grown fowls affected.

GOING LIGHT.

(Inflammation of the Liver.)

There are two distinct forms of the complaint known as "going-light."

(1st.) *Symptoms.*—Shrunken face, more or less pale; stiff in its movements, sometimes lame; loss of flesh, especially on the breast-bone; pale and usually more or less shrunken comb; droppings generally yellow.

Causes.—Over-feeding, or feeding on too fattening foods, such as maize and potatoes; dampness, insanitary accommodation, are all, in our opinion, liable to cause this complaint to arise in a poultry-yard. But the actual cause of the above symptoms we believe to be disease germs, created through the conditions just named.

We have more than once said in the course of this section of our book that we lay no claim to any great scientific knowledge of the subject; and it is possible that in this instance the theory we hold as regards this disease is erroneous; still, we have seen so many instances of this complaint, and studied the same so closely, that, together with the fact that experiments made have seemingly absolutely proved the correctness of our theory, we have no hesitation in laying before the reader our experience. In the great majority of cases we have found that ere this disease has made its appearance maize, or Indian corn, has been given alone or in conjunction with other grains; also, that many of the remaining apparently healthy fowls of the flock were in far too fat a condition to continue in a healthy state for any length of time with similar feeding. In fewer instances over-feeding or over-fattening has not been apparent, but foul, insanitary accommodation has.

As one example of the tests we have made with this disease, we placed an affected fowl with six other thoroughly healthy birds that had never been fed on maize or over-fed in any way. These birds were allowed to remain in the same pen (including a grass run) as heretofore, and yet within a few weeks three of them were attacked by the complaint, and one died of it. Now, considering the nature of the disease, it seemed to us that there must be some other cause than the simple fact that this affected bird was roosting beside the healthy ones.

Our Theory.—The theory we hold is, that the germs of this disease are passed out in the droppings of the diseased fowl. If such is the case, then it can readily be understood how a healthy fowl, in plucking the grass in a morning, is liable to also take in some of these disease germs; or a still more easy method by which it might do so is by throwing the food upon the ground, some of which is thrown in contact with the droppings of the diseased fowl; the healthy ones pick up the food, and with it the germs of the disease, and so it is handed from one to another.

Treatment.—At once isolate the patient, and place in comfortable quarters, warm and light. Feed entirely on oatmeal porridge made with milk, and give warm milk and water to drink. Administer daily a teaspoonful of cod liver oil and ten drops of colchicum wine mixed therein. As the bird's appetite improves either stop the oil and wine altogether or give only an occasional dose, and allow daily a little cooked meat. Green food, especially chopped dandelion leaves, are beneficial.

Although we have by the above treatment cured many a fowl suffering from this disease—some that were almost hopeless cases when first attended to—yet, as a rule, it takes a long while before a cure can be effected, involving considerable time, attention, and cost, and frequently one's efforts are even then in vain. So that, although we would never give up hope of saving a valuable bird's life, yet if a fowl was only worth a few shillings if well, and was suffering from "going-light," we should have no hesitation in dislocating its head and neck and burning the body.

As regards the remaining healthy fowls, if possible disinfect the ground as already recommended in the case of "gasping for breath—gapes," but in any case feed the birds for some time to come from long wooden troughs in preference to throwing the food upon the ground.

(Inflammation of the Bowels.)

(2nd.) *Symptoms.*—Very similar to those described in the previous case of "going light," excepting that generally the face and comb are neither so shrunken nor so pale in colour.

Cause.—Inflammation of the bowels set up by some irritant poison. We have known instances of fowls dying in this manner by being fed on foreign barley containing poisonous seeds. We have also known in one instance where the cause was mixing some mortar and leaving a certain proportion of the cement unslacked, and to which the fowls had access; but we have known many cases where the poultry have died from this complaint from the sole fact that *supposed* slack lime has been thrown about in the fowl-house or some outbuilding. It is, or was, a very common practice with some farmers and others having one of those old-fashioned, large poultry-houses to once a year—generally at turnip-sowing time—clean out the fowl-house and throw a cartload or more of supposed slack lime on the floor. But unless great care has been exercised it will more often than not be found that, although the majority of this lime is slack, there are many small particles of unslacked amongst it. The birds eat these, and inflammation of the bowels is at once set up.

To give but one illustration: Some years since we were lecturing in Devon, and a certain member of the audience at the conclusion of our first lecture informed us that he had for some few months been losing a large number of fowls by some disease; would we mind next morning having a look at them, for he felt certain if something was not soon done he would lose the lot. On making a post-mortem examination we told him the birds had been given some irritant poison. He felt convinced that no one would wilfully have done so. For an hour or more we searched the place for poisonous berries or any other irritant without success. The grain and meals were all examined and tasted, and we were on the point of giving up the solution when it suddenly struck us that we had not seen any fowl-houses about, and we asked where all this great number of fowls were accommodated at night time. It was in a large barn-like building, and on the floor were two or three cartloads of slacked lime!

At the conclusion of our course of lectures in the town, some five weeks afterwards, the gentleman told how, when we first visited the neighbourhood, he was losing many fowls daily, and fully expected he would lose his whole flock, but that, acting on our advice—which was principally to clear away every particle of lime—he never lost a fowl after the first week; and now he did not believe anyone had a more healthy lot of birds than he then possessed.

Treatment.—Naturally the first thing to do is to remove the cause, so that the other birds are not similarly affected. As regards the patient, administer a tablespoonful of salad oil, and repeat three or four times during the next twelve hours. Mr. Vale advocates giving the above dose of oil and a large wineglassful of rather warm water, repeating at end of one, three, and then four hours. If at the end of that time the patient is passing slimy and greenish-coloured matter or traces of blood, continue giving the oil with a little raw egg and two or three drops of chlorodyne. If the crop is empty at the expiration of twenty-four hours feed sparingly on crusts of bread scalded with boiling milk. In a week's time this may be changed to oatmeal porridge made with milk, and if all goes well a little grain may be given shortly afterwards. But, naturally, it more or less depends upon the severity or otherwise of the attack. When first discovered some cases are hopeless, but many lives can be saved by above means.

In concluding our notes on this subject we would add that, as the symptoms in both cases are so very similar, the wisest course to pursue is to take a dead fowl or one of the worst cases and kill it, cut it open, and see whether it is the liver or the bowels that are affected.

INSECT PARASITES.

There is nothing that requires more attention from the poultry-breeder than the subject of insect parasites. In nineteen out of every twenty cases of roup, diphtheritic roup, and even gapes in young chickens, will you find the fowl or chicken is, or has been, suffering very considerably from insect parasites. Naturally there are some complaints that fowls are liable to in which insects play no part, but one of the first things anyone should do who has a fowl mopish is to make sure insects are not the cause, or are not aggravating the evil. As stated at the commencement of this section, we lay no claim to great scientific knowledge, and even if we did the average poultry-keeper would not bear with us did we enter into minute particulars concerning the size, shape, and various formations of the many different species of lice, mites, and fleas that are liable to injuriously affect the health and well-being of our fowls. Sufficient for our present purpose is to more or less roughly classify them by naming those parts or places in which they are found, or in which their eggs are deposited.

Head and Throat Parasites.—We have in a previous paragraph already mentioned the so-called chicken tick (under the heading of "Crying Chickens"); but there is another parasite that infests at times the crests of Polish, Houdans, etc. It is no exaggeration to say that we have seen in the crest of a single Polish fowl what looked like millions in number, though, apparently, there seemed to be nothing much amiss with the bird, excepting that she was a bit mopish. Still, such must have been most detrimental to her health. These particular parasites, which we have failed to find mention of in any work on the subject, are about a sixteenth of an inch in length, and very narrow; varying in colour from almost black to brown.

Besides these, one or more species of body lice frequently lay their eggs on the shafts of the feathers on the throat and at the bottom of the ears, and even on the small face feathers; and very frequently will they deposit their eggs on the fluff or small feathers on the top of the heads and throats of little chickens.

Body Lice.—Insect parasites may practically be found all over the body, but there are two kinds, viz., *Lipeurus variabilis* and *Lipeurus heterographus*, possessing very narrow bodies, that are rarely found but in the primary or secondary wing feathers. However, if a bird is infested with body lice, the majority will be found from the vent down towards the breast bone, amongst the fluffy feathers. The greatest number of eggs, too, will usually be discovered on the soft feathers around the vent, or a little below, *i.e.*, towards the breast.

Poultry House Parasites.—Under this heading we refer to those parasites that are known by the term of partial parasites—that is, insects that live by feeding on poultry, but which only resort to fowls for the purpose of obtaining their food, and which do not breed or remain continually on the fowl's body. The chief two of these are the flea and the red mite. Very rarely will you find the former in the poultry-house of a modern fancier; as a rule they are only to be found in poultry-houses belonging to that good old sort of poultry-breeders who are, at times, held up to us as models—people who stick to the same old breed, the same old houses, and the same old methods; people who imagine that nothing that is new can be good; it is only—in their opinion—something that was known and appreciated in their grandfathers' time that can possibly have any merit in it. They imagine that they have learnt all that can be known of a fowl and its management. "My father and my grandfather were content with the number of eggs produced from the class of birds I have, and never thought of cleaning out the fowl-house excepting just before turnip-sowing season, and why shouldn't I be?" Dust, filth, uncleaned nests, especially if in conjunction with a darkened fowl-house, are places where fleas breed and thrive, obtaining their livelihood by feeding off the blood of the fowls whilst these latter are obtaining their rest (?) at night time. The red mite is, however, frequently discovered in comparatively well-cleaned fowl-houses, and is one of those poultry parasites that not infrequently does a great deal of harm before its presence is ever even suspected. A few years ago, whilst on a lecturing tour, a well-known fancier invited us to spend the night at his house, and on our arrival in the afternoon he desired us to have a special look at one pen of fowls which were not up to the mark, but which he could not find were suffering from any disease. It was not long before we decided that insects were the sole cause. At this he demurred, and, in order to convince us, caught up a bird, and showed us that it had, apparently, not an insect on its body. We said nothing further at the time, but after returning from the lecture we desired him to accompany us with a dark lantern to the fowl-house. When comfortably inside we turned the light on to the perches, nest-boxes, etc., and showed him literally millions of red mites swarming about; the birds, too, were full of them, and we ourselves had an uncomfortable half-hour or so when we adjourned for supper.

Neither the hen flea nor the red mite is, as a rule, to be found upon the fowls in the daytime. The red mites live in cracks and crevices, in wood bark, nest-boxes, etc.; they come out at night time, feed upon the fowls, worry them the whole night long, and thus, and by the suction of blood, lower the birds' constitutions so that they are in no fit state to stand the strain of egg-production, and then, as soon as daylight appears, they hurry off to their various abodes and remain unseen and undiscovered by anyone who is not conversant with their habits. The red mite varies in colour from a pale yellow to bright and dark red, its varying colour being dependent upon the amount of blood it has secretly extracted from a fowl. It is very minute, yet can travel with great rapidity, and to the casual observer appears to possess a more or less round-shaped body. It is useless leaving a fowl-house empty of birds for a few weeks or even months in the hope of thus getting rid of these pests, as we have known of cases where houses have been free of any fowls for six months and still been infested with red mites. They thrive best in dark, badly-ventilated abodes.

Treatment for the foregoing Parasites.—To destroy body lice, give the fowl a good dusting with pyrethrum powder. Any of the various insect powders advertised will kill the parasites, but will not prevent many eggs from hatching afterwards, so that, in addition to giving the bird a good dusting with powder, any large formations of egg clusters should be plucked out and burnt, and the portions of feathers with small clusters of eggs attached should be dressed in a similar manner as recommended for the destruction of ticks. (See "Crying Chickens.")

It is also necessary to bear in mind that, although when fowls are troubled with lice such can always be found on the birds, yet, when fowls are badly infested, many may be found in the nest-boxes amongst the hay or straw—more particularly in straw—and that even for lice a thorough cleansing of the house is often desirable. But when such pests as red mites have to be dealt with the foregoing treatment will be of little service excepting for the time being, for as soon as the effects of the powder have worn off they will at once recommence their attacks. To get rid of the latter, clear out all filth and rubbish, scrape the perches, nest-boxes, etc., as clean as possible, removing any wood bark there may be, and with a whitewash brush give the whole a good dressing with paraffin oil, seeing that the same is well applied into all cracks or crevices. In a day or two's time give a good whitewashing throughout, made with freshly slacked lime, to which, if desired, a little carbolic acid may be added.

HORNY GROWTH ON TONGUE—PIP.

Symptoms.—A hard scale formed on tip of tongue. Probably no so-called disease of poultry has been more ignorantly treated by farmers' wives than this complaint has. A very common prescription in such cases was pills made of rue, butter, and soot, and in some instances we have been assured that unless the patient was made to swallow also the horny growth no remedy would prove effective, and in almost every case it was thought absolutely necessary to remove this growth. As a fact, "pip" is no disease at all, but merely the effect of some complaint. It simply means that the ordinary channels by which it breathes, viz., its nostrils, have from some cause—probably roup or diphtheritic roup—been blocked up, and that it has been forced to breathe through its mouth, and it is this fact and the continued exposure of its tongue to the atmosphere that has caused this horny growth to appear. If you remove the same you are doing absolutely nothing to check that which caused it to arise, but, on the other hand, you are actually assisting the illness, inasmuch as the removal of the hard scale has caused considerable pain and left the tongue tender and painful.

Treatment.—Treat the patient as advised under the heading of "Running at the Nostrils" or "Cheesy Growths in Mouth," whichever case applies, and as regards the horny growth, moisten it as often as possible with a little glycerine or sweet oil. In a short time the growth will crack and peel, and can easily be removed without pain.

PALE AND SHRUNKEN FACE.

When a bird is moulting, frequently the face and comb become pale and shrunken without any serious results being likely to arise, but if, in addition to these symptoms, the bird walks stiffly and is more or less lame, or if in handling the same it is found to be losing flesh, at once treat as recommended in the case of "Going Light: Inflammation of the Liver." But if these latter symptoms are not observed, a teaspoonful of cod-liver oil administered every other day for a week or two and a little cooked meat daily will be found beneficial. If the appetite is poor, administer each morning, some ten minutes or so before breakfast, a tablespoonful of the following solution, viz.: ½oz. chlorate of potash, 1oz. perchloride of iron, 1 pint distilled water. Fresh green food, especially chopped dandelion leaves, should be freely given, and all stale portions removed.

PUFFED SKIN.

This complaint rarely occurs in other than very young chickens.

Symptoms.—Usually it is the front part of the bird to be affected, the puffed-out skin extending from the breast to well up the neck. On handling the bird it can be felt that the skin is inflated with air.

Cause.—Affection of the lungs, due to overheating or overcrowding, which with young chickens at night time amounts to the same thing. All chickens are not alike in their habits any more than human beings. Some fifty chicks may be placed into a given size rearer without injury from overheating from the fact that they do not crowd up together, whereas only half that number of other chickens may be too many for the same accommodation from the simple fact that they are in the habit of crowding up together in one corner at night time.

Treatment.—Remove at least half the chickens to other accommodation. With a clean needle puncture the skin and let out the air. Add ten grains citrate of iron and quinine to each breakfastcupful of drinking water.

Prevention.—We have never known cases of puffed skin to arise where chickens have been kept under healthy conditions, and by one who understood their management. If at night time it be seen that they are crowding together for the first time, the probability is they are too cold, and more warmth should be given them; but if they are not examined in this way, in a short time the crowding together becomes a habit, and, anyhow, it can be well understood that, supposing the foster is really at too low a temperature, those chickens that are in the centre of the crowd will soon become overheated, and unable to extricate themselves owing to the pressure of those on the outside of the crowd endeavouring to get more warmth by forcing their way in.

Naturally, we are not referring to the first few minutes that the chickens enter the rearer on a cold evening, especially if there has been a sudden drop of the thermometer, but to an hour or so after that time, when they should be comfortably settled down for the night.

RUNNING AT THE NOSTRILS—ROUP.

Symptoms.—A sticky, transparent discharge from the nostrils; frothy bubbles on the eyes; sneezing; breathing hard and laboured; gaping, similar to a fowl with gapes; mouth filled with slimy, frothy bubbles. As the disease progresses this discharge from the nostrils thickens and becomes most offensive; the mouth and throat lose their colour and become pale. If not checked, this paleness increasee and tuberculous deposits are observable. At times the feathers on the side of the breast under the wings and on top of shoulders are seen to be glued together, from the fact that the bird, feeling mopish, frequently places its head under its wings, and in doing so the discharge from its nostrils and eyes is rubbed on to the feathers.

But although the above are the principal symptoms of this disease, it must not be supposed that if such are not noticed while the birds are running about or feeding, or even when held in the hand, they are therefore quite free of roup. A fowl may have a slight attack of roup and run about for days and even weeks without showing any discharge from either the nostrils or the eyes, or any of the other symptoms mentioned.

The only satisfactory plan of making sure that your birds have not developed the first symptoms of roup is to periodically—as we advised at the commencement of this section—examine them. Squeeze the nostrils in a downward direction—*i.e.*, place the thumb near the eye and squeeze the nostril down to its outlet—and if any mucous discharge comes away treat the bird for roup.

Causes.—It is asserted by some that direct contagion is the cause. To a limited extent only are we prepared to admit this contention. If the disease has advanced so far that tubercular deposits are to be found, then direct contagion would account for the spread of the complaint; but in our opinion direct contagion has nothing to do with the first symptoms of this disease breaking out in the majority of instances.

Over and over again have we known young chickens, all produced from the same stock birds, to be placed in different houses out on fields, and for some of these houses to have the inmates suffering from roup, whilst the occupants of the remaining houses were never affected, proving that hereditary predisposition was not the cause. Now none of these fowls was ever in contact with another fowl, whether suffering from roup or otherwise. Further, in order to test this theory, we have placed a perfectly healthy fowl in an exhibition pen along with another suffering from roup, and for two days we did nothing to attempt to cure the roupy patient. After then we cured this bird and two others in succession, the original healthy bird being with them the whole of the period—some weeks—and never taking the complaint.

Damp and cold are the chief incentives to develop roup, but these are not, in our opinion, the actual cause, but merely influences that develop the disease; the true cause we believe to be overheating and impure atmosphere.

Predisposing Causes.—If a considerable number of birds are placed together in a house not well ventilated, and you enter the same quickly after the birds have been to roost some three or four hours, you will find the atmosphere is heated and evil smelling. The birds remain in this heated, impure atmosphere the whole night long; they come out next morning in a feverish, weakened condition, to be suddenly plunged into the midst of a cold and wet October day. Imagine yourself sleeping the whole night long in your ordinary clothes in an overheated, crowded room and filled with impure gases, and then, without any extra covering, going out into the cold and wet for the rest of the day. Probably, under such conditions, it would not surprise anyone if their own nostrils were as similarly affected as their poultry's.

But besides overcrowding of poultry-houses, which is equivalent to overheating the same, we believe that another very common predisposing cause is insects. In almost every case of roup that we have fully investigated we have found either a number of insect parasites on the fowls themselves, or, where these were absent, a quantity of red mites in the poultry-houses. In either case the effects are the same, viz., by the continued worry of these insects and by their suction of the blood from the fowl's body the system has been weakened, and is thus more prone to attack than it would have been if of strong vitality.

Treatment.—Remove to warm, dry, well-lighted accommodation. Examine for insects, and, if found, treat as advised under the heading of "Insect Parasites." With warm, disinfected water thoroughly wash out the mouth and nostrils. This should be done most thoroughly twice a day; especially look for and, if found, remove a collection of what looks like transparent jelly on the roof of the mouth. This can readily be done by dipping some soft flannel into the water and covering the finger with the same, and then placing the finger in the mouth with the tip turned up to the roof. As to the nostrils, they should be well bathed, and gently but firmly squeezed till all mucous discharge ceases. Wipe dry, and after each operation administer to a full-grown fowl a teaspoonful of cod-liver oil, to which add five or six drops of a mixture composed of half terebene and half eucalyptus oil.

Feed on oatmeal porridge made with milk, meat, chopped green food, and, if the bird refuses to eat and has an empty crop, administer a raw egg beaten up in a little milk. For drinking water obtain some 10 per cent. salicylic acid (dissolved in alcohol) and add an equal proportion of water to same.

Time and patience are often required to effect a cure, but if the weather is bright and sunshiny a run outside frequently and materially assists, provided the bird is brought in should a change in the weather take place.

SCALY LEGS.

Symptoms.—During the early stage of this complaint the scales on a fowl's legs may be observed not to fit smoothly down the shank or on the toes, the scales being somewhat open. On closer examination it will be seen that a powdery, chalky substance is formed at the roots of the scales, and forces them apart. In very severe cases we have known the legs of a fowl to appear double and even treble the thickness of its true size, with often a large rough mass of crust bulging out here and there, and the bird has great difficulty in walking, if not actually lame, and frequently loses a toe or two.

Cause.—The disease is caused by a minute mite (*S. mutans*). Professor Theobald says the female mite is a minute round white body, with very short legs, ·40 mm. to ·45 mm. in length; the male is still smaller, being only about half the size.

The male larva and nympha have all their legs suckers, common to all *Sarcoptes*. The females have no suckers, and are more globular than the other three forms. They are ovoviviparous.

Effect.—A great many poultry-keepers whose fowls are frequently affected with this disease take but small notice of the matter. They admit it looks unsightly, and that they will, at a convenient time, remedy it, but it is, in their opinion, not a matter of much importance, and weeks and months are allowed to go by without any attempt being made to effect a cure. But what is really taking place is this. These mites are not simply making their homes under the scales of the bird's legs, but they are actually burrowing into the fowl's flesh! The bird is in constant pain; he is afforded no peace either day or night. He is in pain when he walks; he is in pain when he stands still. His system is weakened; he cannot grow out as he ought to; or, if an aged bird, cannot moult quickly—loss of stamina prevents him. He probably hangs in the moult and diphtheria or tuberculosis carries him off.

Predisposing Cause.—Our experience is that the scaly leg mite attacks fowls far more frequently on dry, chalky land than is the case on heavy clay or moist ground; that fowls shut up in a small dry run are far more liable to be affected than fowls on similar land that have their entire liberty and can get out on to the long, damp grass early in the morning before the dew has dried up. In other words the mite (*Sarcoptes mutans*) revels in dryness and abhors dampness.

Treatment.—Soak the legs daily for ten minutes in warm water. Dry with a soft towel, and apply a mixture of creosote and lard (one of creosote to ten of lard), working the same well into the scales by the aid of a toothbrush. Do not rub hard enough to break off large pieces of crust and make the legs bleed, but endeavour first of all to well soften the crust by a daily and thorough soaking, and the application of the ointment.

In the early stages a few dressings in the above manner are sufficient to effect a complete cure, but in severe cases time and considerable patience are required. We have never come across a single case that we were unable to eventually cure, unless the fowl was at the time we took it in hand also suffering from some other disease.

Prevention.—That "scaly legs" can be imported into one's yard by a fowl suffering from the same we have proved without a doubt, and if a new purchase is seen to be suffering from this complaint it should be kept in a small place by itself until quite cured before being permitted to associate with the other stock.

When "scaly legs" frequently occur amongst the birds an excellent preventive—though not a cure when the disease has arisen—is to compel the fowls to walk through water every time they leave the house. A very simple method of doing so is by making a small wooden tunnel from the outlet, either inside or outside of the house—the latter for preference—about 3ft. long, and only of sufficient height to permit of the fowls walking through it. When the birds have become accustomed to it place an iron pan of from 2in. to 3in. in depth, and as broad as the wooden tunnel, in the centre of same, if necessary sinking it a little in the earth, and when the fowls have also become accustomed to walk through this fill it with rain water, and by this means the legs are kept more or less damp. In cold weather it is advisable to remove the pan after the birds have walked through it in the morning, and allow them to go to roost with dry legs, and in very severe weather to dispense with water altogether.

Not only will the foregoing simple method prevent in most cases an outbreak of "scaly legs," but it will serve the double purpose of keeping in good trim the legs of any clean-legged exhibition specimen.

STRAINING.

When a fowl is observed straining to pass out matter, especially if considerable thirst is also apparent, an irritant poison, either vegetable or mineral—such as supposed slack lime or cement—should at once be looked for and the cause removed.

Although we have previously referred to the subject, we cannot too much impress upon the reader the very great risks that are run by throwing down supposed slack lime in fowl-houses. Minute particles remain unslacked, and if these are eaten by the poultry—as they frequently are—inflammation of the bowels is sure to follow, and it is no exaggeration to say that we have personally known thousands to die from this cause alone.

Treatment.—Having removed the cause, place the patient in a warm abode (if winter time) on soft, dry hay, and administer four times a day a teaspoonful of slightly warmed salad oil, and in severe cases a couple of drops of chlorodyne may be given in the oil to ease the pain. As soon as an improvement in the bird's condition is noticed administer three times a day a teaspoonful of warm milk, and as the fowl approaches convalescence feed on oatmeal porridge made with milk, and give milk and water to drink.

Other Causes.—Besides lime and cement, we have met with other substances that have caused a like result, such as cayenne pepper, continuous course of "egg-producing" powders, and poisonous seeds often contained in "sweepings" and sold as cheap (?) food for poultry. Similar injurious seeds may also be found in many samples of "light" foreign barley, etc.

SWELLINGS.

SWOLLEN EYE.

Symptoms.—There are two forms of this complaint. First, the skin around the eye is puffed out and feels soft to the touch, and secondly, where the swollen portion is, firm and hard.

Cause.—The first case mentioned is the result of a cold, and the second is a tuberculous growth.

Treatment.—In the case of the soft swelling around the eye, squeeze the bird's nostrils in a downward direction, and if any mucus comes away treat as advised for "running at the nostrils," and in addition paint the swelling with tincture of arnica, being careful that the same does not get into the eye.

If, however, the swelling is hard, or becomes hard after several daily applications of the arnica, lance it and squeeze out the tuberculous growth that will then be found, and wash out the wound with water diluted with a little permanganate of potash.

Swollen Face.

The symptoms are exactly similar to those quoted in the previous paragraph, and the treatment is the same.

Swollen Wattles.

Causes.—We are of opinion that there are at least two distinct causes for the much enlarged wattles seen on fowls at times, and which are often of a deep purple colour.

In the one case it may be due to the collection of fluid caused by injury or from congestion of the kidneys, and in the other case it is decidedly due from being frost-bitten.

Treatment.—In the former case we have found nothing to equal the treatment recommended by Mr. Vale, viz., foment the swollen wattles with vinegar made rather hot, and dose the subject freely with warm water. If the swelling does not soon disappear paint with tincture of iodine, and pass a large needle threaded with worsted through each wattle in the under side; cut off the worsted sufficiently long to allow of the ends being tied together loosely so as to form a loop; move the worsted daily to and fro. When the swelling has disappeared the worsted should be removed.

When frost-bite is the cause, bathe the wattles thoroughly in as cold water as possible, then dry and apply daily some carbolised vaseline. If in a few days of such treatment an improvement is not apparent, pass the worsted needle through as recommended previously.

WARTS ON FACE, COMB, ETC.

(See "*Cheesy Growths in Mouth.*")

WHITE GROWTH IN EYE.

Symptoms.—A white or yellowish spot may be seen at the corner or under-lid of the eye.

Cause.—Roup or diphtheritic roup.

Treatment.—It is quite possible that this growth may not be seen until after the bird has been cured or has recovered from the original cause; but in any case read under the headings of "Running at the Nostrils," and "Cheesy Growths in Mouth," and, if necessary, treat accordingly, and in addition bathe the eye well with warm water, and then gently but thoroughly squeeze out the accumulation.

This simple operation is often a source of considerable trouble to the novice, and we have had many write and say that after trying to follow our advice they are convinced that they would squeeze the eye itself out first. But on our again writing and telling them to persevere, they have often succeeded at the next attempt. It is really most simple, but at times requires a little judicious coaxing.

WHITE SPOTS OR STREAKS IN MOUTH.

(See "*Cheesy Growths in Mouth.*")

WORMS IN POULTRY.

Notwithstanding the fact that there are no less than thirty-six distinct species of worms that live as parasites in fowls, there are only two kinds that are commonly met with, and which also cause injury to the birds, viz., the gape worm and the white worm (*Heterakis*). The former we have previously mentioned, and as regards the white worms, which in colour vary from white to a dirty yellow, these are far more common in poultry than many people imagine, and often cause stoppage of the bowels by collecting together in a solid round mass, the obstruction causing the death of the bird.

Symptoms.—The surest method of ascertaining whether a fowl is suffering from these worms is to examine closely the droppings; when some of the worms may be found passed out of the system.

In addition, the feathers appear harsh, lose their sheen, and become more or less erect instead of lying close to the body. Diarrhœa not infrequently affects the patient, the comb becoming pale, and gaping is observed.

Treatment.—It is equally as essential to separate fowls suffering from white worms from healthy ones, as it is in the case of those affected with the gapes; also that the ground should be thoroughly disinfected, because not only does this complaint originate by the fowl picking up the eggs off the ground, but those worms that are passed out by the affected patient are most liable to be taken up by other healthy specimens.

Let the affected fowls fast for at least eighteen hours before attempting to expel the worms. It is much the best plan to place such birds in exhibition pens, singly, and by such means and by keeping a careful watch, any worms expelled can at once be removed and destroyed.

We have successfully treated many cases by administering one-third to half a level teaspoonful of Epsom salts, giving in an hour's time a teaspoonful of sweet or olive oil, followed the next morning before the bird has any breakfast by one-third of a quarter of an ounce of areca nut, repeating in an hour's time the dose of oil.

But Professor Theobald advocates a remedy which we have found still more efficacious. He recommends santonin in the form of a pill, three grains to each pill, given every other day for about a week, followed by the sweet oil as before advised.

Feed the patient on soft food only, and not for two or three hours following a dose.

BROKEN LIMBS.

Accidents will happen, even in the best regulated poultry yards. A violent storm has overturned both houses and coops, and, in addition to killing a few birds outright, has also maimed several others. A broken leg is not, as a rule, a very difficult matter to set right again, but, naturally, the sooner it is discovered after the accident, and proper means employed, the better is it for all parties concerned.

In the case of an old bird getting its leg broken we have found split cane about the best support, but with chickens pieces of whalebone are the most serviceable. Having obtained the help of someone to assist you, cut—of the required width—four pieces of whalebone to such a length that they are just a little short of the distance between the foot and the shank joints (we are referring to a broken shank), round off the ends of the whalebone and place them evenly around the shank—front, back, and both sides—with just a little clear space in between. Now with a roll of bandage about an inch wide bind up the shank and supports firmly, but not too tightly to stop circulation. Place the patient in a narrow wicker basket (on soft hay or some soft material), which prevents any attempt to turn round or stand up in. If the basket is too high or too wide fill up the bottom or pack the sides with something soft. Remove when necessary for feeding purposes. Soft food only should be given, with water to drink.

The foot will, as a rule, swell considerably, but after forty-eight hours there should be a gradual decrease of same, and if there is not the probability is that the fracture has been bound up too tightly, and it should be carefully undone and rebound again. After forty-eight hours the bird may be placed in some coop or cock-box on the soft grass, until in the course of a fortnight or so it has quite recovered, and the bandages and supports removed, when, if all goes well during the next day or two, it may be replaced with its companions.

A broken wing requires a little more ingenuity, but by using two or three supports only—top and under in any case—and binding with worsted it can often be mended satisfactorily if the bird is confined and has no temptation to use its wings, such as attempting to fly up to a roosting perch.

A broken toe can be similarly mended by using two or three supports and binding with worsted.

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